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cover story

Behavior Modification

This issue of the *Digest* features condensations of several articles on operant conditioning and behavior modification.

(Picture courtesy of Dr. Richard W. Malott. Photo by James Smith, B.P.A., Photographic Service, Western Michigan University)

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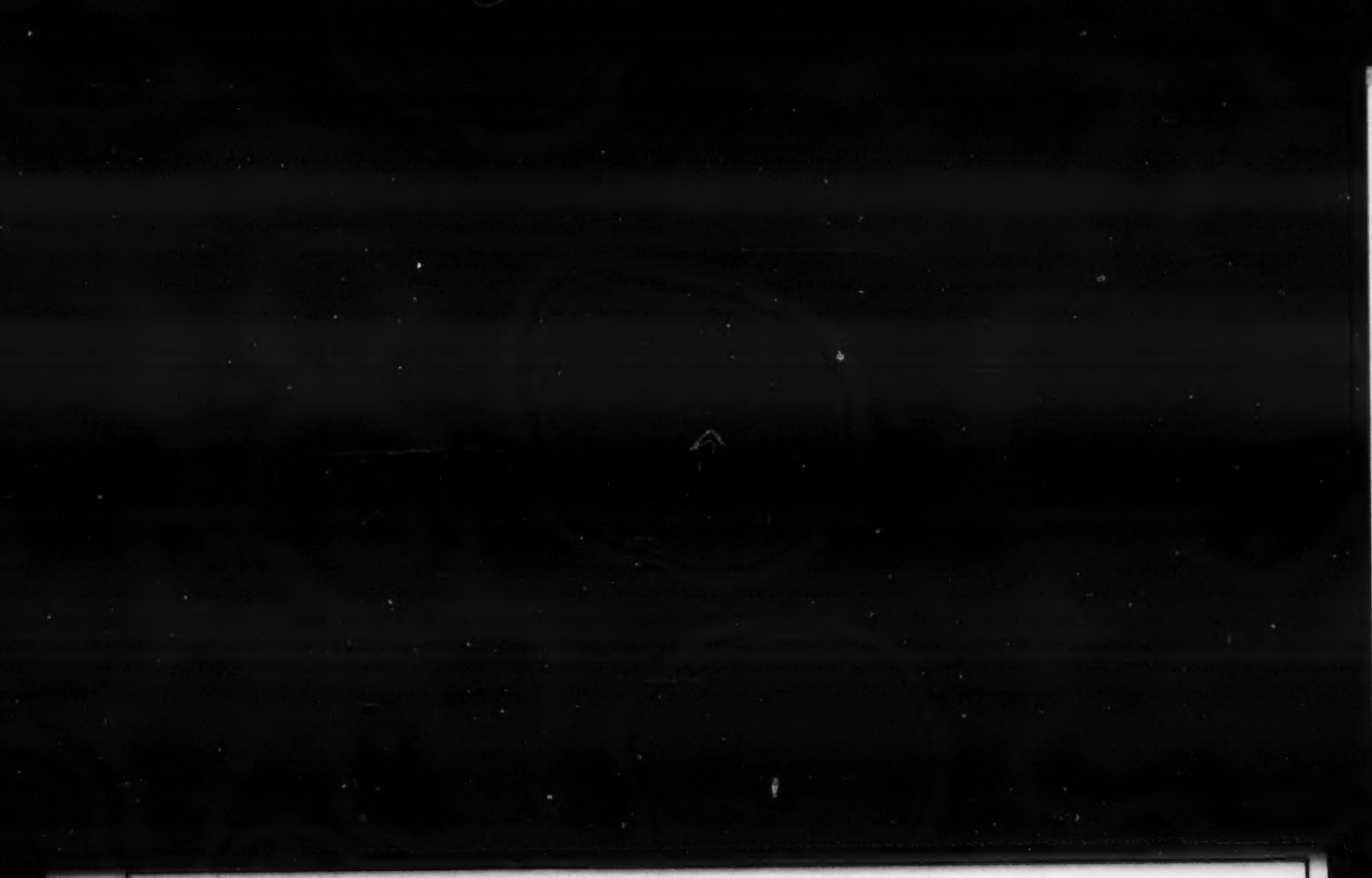

Acquisition of the People Concept in Pigeons

Richard W. Malott and James W. Siddall

When an organism makes the same response to all members of a given stimulus class, we term this behavior "conceptual." The literature relating to animals contains many demonstrations of the acquisition of simple or easily defined concepts. The concepts include size, color, triangularity, numbers, novelty, patterns, guided missile targets, bad parts on an assembly-line inspection, and matching. These studies indicate that conceptual behavior can be demonstrated in cases where a given concept can be clearly defined.

Recently, experimenters have focused on more complex conceptual behavior. Our experiment was designed to determine the minimal number of positive and negative examples of the "people concept" required for criterion performance. The procedure employed serial presentation of the discrimination problems. The serial procedure differs from nonserial designs in its requirement of criterion performance on each discrimination problem before progressing to the next. People-concept studies have used a free operant design with intermittent reinforcement. This allowed subjects to be tested for generalization during extinction while freely responding.

It was reasoned that a design which employed discrete trials and continuous reinforcement would be the most desirable. Since no generalization test during extinction was required, it seemed reasonable to use continuous reinforcement in the discrimination procedure. This should lead to more rapid learning since every correct response is followed by reinforcement and every incorrect response is extinguished.

This serial procedure is similar to the learning-set procedure. The similarity between our procedure and the typical learning-set procedure necessitates a control group to ensure that the performance during concept formation is not simply due to the development of a learning set.

In summary, this experiment sought to answer two questions: Can the people concept be acquired using a procedure of serial presentations? What is the minimal number of discrimation problems needed for the mastery of the "people" concept?

The subjects were six experimentally naive pigeons, divided into two groups of three subjects each. The experimental chamber was a modified Wisconsin General Test Apparatus. It consisted of an 8 x 12 x 15-inch wooden enclosure. The front contained a rectangular hole 7 x 2 inches as an observation window. This window was covered with Plexiglas containing three holes.

The stimulus pictures were affixed to wood cubes. There were two stimulus classes: pictures of people and pictures of objects. The "people" pictures included color and black-and-white prints of men, women, and children, representative races, various states of dress and undress, and a wide variety of bodily positions. The pigeon could view the cubes through the Plexiglas and peck a particular cube after putting his head through the appropriate hole.

The procedure for the concept group is summarized in Table 1. Preliminary to Phase 1, all three pigeons were trained to eat from the food wells and peck a black stimulus cube through the use of standard operant conditioning procedures. When the

Table 1.
Procedure Summary for Concept Group

Phase	S+Pictures	S−Pictures
1	Human faces	Assorted objects (same type in each phase)
2	Human torsos	Assorted objects
3	Groups of humans	Assorted objects

cube-peck response was established, Phase 1 commenced. During training, 40 reinforcements were administered each day on a continuous (CRF) schedule. Each reinforcer consisted of a kernel of corn in the appropriate food well. A given discrimination problem consisted of one of the "people" cubes and one of the "object" cubes. This pair of stimulus pictures was presented until five consecutive correct responses were reached. When this criterion was met, a new discrimination problem was presented.

The criterion for terminating each phase was a correct response on the first trial of five consecutive problems. This was taken as evidence that the concept had been mastered. It should be emphasized that there were two separate criteria for the concept group. In the first place, five consecutive correct first trials were required before a new stimulus class was presented. There were two additional classes of stimulus pictures. In Phase 2, pictures of human torsos were designated as the S+s and pictures of objects were the S−s. In Phase 3, the S+s were pictures of groups of humans and S−s were object pictures.

The stimuli and procedure for the control group were essentially the same as employed with the concept group. The major difference was the S+s were drawn randomly from both the "people" and "object" stimulus classes.

The results show that the concept "people" can be acquired using a procedure of serial presentation of discrimination problems. The initial performance of all subjects during each subclass was marked by high error rates. The number of problems required to reach criterion decreased between subclass one (faces) and subclass two (torsos). During the third subclass (groups), the number of problems required for mastery increased to about the level observed in subclass one. These data suggest that if positive transfer is operative between subclasses, it is limited and incomplete. All subjects in the control group exhibited extreme fluctuation in error rates across problems and failed to reach criterion.

The question remains as to what extent the performance of the concept group was influenced by learning-set phenomena. There is no indication of a gradual development of the concept prior to its final mastery.

However, there is a difference in error rate on trials after the first trial. The concept group averaged 6, 5, and 6 errors across all discrimination problems throughout all subclasses, excluding concept criterion problems. Subjects in the control group showed much higher mean error rates: 18, 14, and 11. This contrast is even maintained when comparing mean error rates for the final five problems of the control group (20, 22, and 11) with the mean error rate across all problems of the concept group. These data indicate that the conceptual mastery attained by subjects in the concept group was not simply due to the learning-set process.

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Omission Training: Effects of Gradual Introduction

Jeff S. Topping, Osmo K. Larmi, and Dennis L. Johnson

Because of its relevance for the modification of behavior, attention has recently been focused on "omission training," in which subjects are reinforced for omitting a previously reinforced response. Investigations comparing the "powers" of omission training with the traditional response-elimination methods of extinction and punishment have shown that omission training can be an effective method of response elimination, especially regarding the durability of the effects.

This experiment was designed to examine the effectiveness of gradually increasing the parameter values during omission training to their maximum as opposed to introducing the maximum values immediately.

The subjects were eight pigeons. They first were given 2 days of training, during which 60 reinforcements were delivered daily according to a variable-time 30-second schedule. During the next 3 days, they were shaped to peck the response key and allowed to make 60 continuously reinforced responses daily. Then gradually they were introduced to a variable interval 30-second schedule, and response rates were stabilized.

Next the subjects were split into two groups and exposed to omission training. Four pigeons were switched immediately (Group I) to an omission training 30-second schedule. That is, reinforcement was always contingent on omitting the pecking response for 30 seconds, each pecking response postponed reinforcement for 30 seconds, and reinforcement occurred every 30 seconds, provided no pecking responses were emitted. The remaining pigeons were switched initially to an omission training 2-second schedule, with the omission training value being gradually (Group G) increased to 30 seconds.

The results demonstrate the efficiency of gradually introducing omission training. The gradual introduction procedure provides for immediate and frequent reinforcement of "not pecking" as well as extinction of the pecking response, and this combination seems to be effective for eliminating the originally reinforced pecking response. Beginning with the second day of omission training, all Group G pigeons reduced the frequency of pecking drastically, and subsequently, rarely emitted a pecking response.

In contrast, pigeons in Group I decreased pecking relatively slowly. This finding could be attributed to the fact that these subjects obtained fewer reinforcements than Group G subjects during the early omission training sessions and had fewer occasions for the development of "not pecking." Thus, it is understandable that Group I subjects reduced the frequency of pecking more slowly than did Group G subjects.

Although there were no significant effects in durability testing, none was expected. The extremely durable response elimination shown by all subjects confirms previously obtained findings with omission training.

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Effects of Success, Failure, and Reward Outcome upon Contingent and Noncontingent Self-Reinforcement

John C. Masters

Children's self-administration of freely available gratifications may be affected by antecedent experiences, including success, failure, or various conditions of social comparison. In experiments where the self-regulatory function of self-reinforcement was investigated, children have been instructed to self-administer gratifications contingent upon their performance at a prescribed task. Investigators studying self-gratification per se, as an index of self-indulgence or even "ego control," have provided children with freely available gratifications which they could dispense to themselves whenever they wished while performing a cover task. The design of these studies appears to have been guided by the following hypotheses:

Self-reinforcement which is designated contingent is affected by feedback concerning performance on a task and should be independent of the emotional impact from unrelated antecedent experiences such as success and failure.

Self-gratification which is to be noncontingent, though in the presence of a cover task, is affected less by performance on the task than by the emotional effects of labels such as success or failure, or by antecedent social comparison experiences which are independent of the cover task itself.

Individual studies of self-reinforcement or self-gratification have not included measures of both noncontingent and contingent self-reinforcement. Generous noncontingent self-reinforcement following failure might be interpreted as an attempt at "self-therapy" or a loss of ego control, while increased self-reinforcement following success might be interpreted as a sort of "self-congratulation."

In this study, success and failure and reward outcome were manipulated independently. Experiences of success or failure, defined by communications concerning adequacy of performance, were accompanied by reward which was appropriate or inappropriate to the success or failure. Children performed on a motor task and were informed as to their competence (success or failure). In a control condition, children received no information concerning performance adequacy. Tokens were dispensed which could be traded for valuable prizes. Half of the children in the success conditions were told that the tokens they were receiving were the proper number, while half were told that the machine was broken and they were receiving fewer tokens than they deserved. Similarly, half of the children in the failure conditions were told that the tokens they were receiving were appropriate for their poor performance and half were told that the machine was broken and they were receiving more tokens than their performance merited. Following these manipulations the subjects were allowed to reward themselves, either as they performed on the same task or as they performed on a different task. During these tasks, children were told to judge their performance and dispense their rewards contingent upon the quality of their performance or they were told that the task was for their enjoyment and they were to reward themselves without regard for their performance.

It was predicted that:

Children in the success conditions would reward themselves generously, showing higher self-reward both contingently and noncontingently, and on the same and different tasks, than would children in the failure conditions.

Subjects receiving what they thought was a high level of reward would show a lower level of self-reinforcement than would subjects who believed their rewards had been of less value.

Children whose self-dispensation of reward was to be contingent upon their performance would show less self-reward than children whose self-reinforcement was to be noncontingent.

Contingency-noncontingency and similarity-difference of task would interact with success and failure experiences.

Failure subjects would show greater self-reinforcement when self-dispensation was noncontingent than when it was contingent, and greater self-reinforcement during a task different from the one on which they had experienced failure.

Failure subjects would show greater noncontingent self-reward than would subjects in a no feedback control condition.

Failure subjects would show increased self-reinforcement levels when it was dispensed during a task different from the one on which they had failed, and that success subjects would reward themselves less generously on such a task.

The Experiment

Subjects were eighty 7- and 8-year-old children, 40 boys and 40 girls. The experimenter, who introduced himself as someone interested in how well children could perform on some games, showed a pursuit rotor, which was called the wheel of fun. Subjects were then told that they would earn tokens worth valuable prizes.

Success or failure—During 15 trials on the pursuit rotor, some subjects were led to believe that their performance was good and others that it was poor. Success subjects "practiced" for the first 10 trials and received all tokens on the final five. Failure subjects had no "practice." They earned most of their tokens on the first trials, getting fewer each time until they received none on the last five.

High or low reward—All subjects received nine tokens. Before the game began, all children were shown three prizes. The least attractive was worth three tokens, the middle one nine, and the best one 15. Children in the high-reward condition were told that hardly anyone won the middle prize and that no one had won the big prize. Children in the low-reward condition were told that most children won the biggest prize. After performing on the pursuit rotor, children traded in their tokens for the middle prize, which was put aside as they were introduced to a second game.

Same or different task during self-reward—The second game was either the same one on which the children had succeeded or failed or a different game involving maze drawing. Tokens were available for self-dispensation by the children, but these were much larger and colored differently from the ones from the first sequence. Children could reward themselves from an array of five tokens available after each of five trials.

Contingency or noncontingency of self-reward—During their performance children were told that they were allowed to take as many tokens as they thought they deserved (contingency)

or as many as they wished (noncontingency).

Control conditions—Children were given nine tokens prior to their performance on the pursuit rotor and, following 15 trials, were shown three prizes and told that their tokens were worth the middle one. Following these procedures, children in the control conditions rewarded themselves during further performance on the pursuit rotor or on mazes, under contingent or noncontingent instructions.

Effects of Success, Failure, and Reward

Children in the success conditions rewarded themselves significantly more than did children in the failure conditions. Moreover, children in both of these conditions showed greater self-reinforcement than did children in the control conditions.

Children in the experimental conditions rewarded themselves significantly more generously when they were to do so noncontingently. Children in the control conditions showed less self-reinforcement than children in the comparable experimental conditions, especially when rewarding themselves noncontingently.

The level of self-reinforcement shown by children in the success conditions was unaffected by the contingency or noncontingency of dispensation, while children in the failure conditions showed a marked and significant decrease in contingent self-dispensation. However, the amount of noncontingent self-reward by children in the failure conditions did not differ from that by children in the success conditions. This appears to be the first clear evidence for a self-therapeutic increase in self-reinforcement following failure, with an accompanying self-congratulations effect.

Children in both success conditions showed a high level of self-reinforcement during performance on any task, while children in the failure condition showed decreased self-reinforcement only during performance on a task similar to one on which they previously failed. A self-therapeutic level of self-reward appears to be shown by children in one failure condition: Children in the failure-different-task condition showed a greater level of self-reinforcement than did children in the control-different condition.

One prediction failed to be confirmed. The magnitude of the reward earned during success or failure did not have a direct effect upon subsequent self-reinforcement.

In summary, self-gratification in the form of both self-congratulations and self-therapy does occur among children in our society. The results show that children, by the age of 7, have internalized systematic rules concerning the conditions under which they may engage in self-gratification. These rules involve consideration of the contingency with which self-gratification is to be dispensed, antecedent experiences of success or failure, and the similarity of a current activity to the task which previously resulted in success or failure.

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Operant Conditioning of a Grammatical Form Class with Second-Grade Children

Karl A. Minke

A word response class is a group of words with the characteristic that reinforcing some words in the class makes all other members of the class more probable. One group of words meeting this criterion consists of words which may be substituted for one another in a sentence, i.e., members of a common form class.

Several investigators have reported conditioning of grammatical form classes with adult subjects. However, these studies are not clear demonstrations of the general conditionability of form classes in the absence of other controlling variables. One study suggested that the results were dependent upon the ability of the subjects to verbalize the experimental contingency.

This experiment was designed to demonstrate that verbs would constitute a word response class in the absence of awareness concerning the reinforcmeent contingencies. An attempt was made to control for the possibility that a common label was mediating performance by using as subjects children who supposedly had not yet been taught the concept "verb." To eliminate the possibility that a series of subclasses would be shaped, a controlled operant procedure was utilized. In this procedure the experimenter identifies the particular responses to be reinforced prior to the onset of the experiment.

Twenty children were randomly selected from six second-grade classes. Ten children were randomly assigned to an experimental group (EXP_1) and 10 to a control group (CONT). One week later another 10 subjects were selected as a second experimental group (EXP_2).

A list of the verbs occurring in the 1000 most common words in the English language was compiled. From this list 30 verbs were randomly selected. Sixty control words which were never used as verbs also were randomly selected. Each verb was matched with two control words with respect to frequency of occurrence.

Each verb and its control words were typed in a row in random order on a 5 x 8 index card. The 30 cards were randomly grouped into five sets of six cards each.

The cards were presented by placing them one at a time on the table in front of the subject. The materials were hidden behind a black partition mounted on the table.

A subject was seated in front of the partition and instructions were read:

> I want to know how people choose different words when they are presented in different ways. Three words will be written on a card. You are to read all of the words to yourself and then say one of them out loud. Since you may not be able to read all of the words, I will point to each word once and read it to you. This is all I can tell you, so unless you have any questions, we'll begin.

Subjects in both experimental groups were given a pencil and paper for recording their scores and in addition were read the following instructions:

> For saying one of the three words on the card—but not the other two—you will get a point. I will tell you when you get a point by tapping the table, like this. You keep count of your points. I will want to know how many points you make, so make a mark as soon as you receive each point. Remember, choose one of the words and say it out loud. If you choose the right word, you will get a point. Try to earn as many points as possible.

The cards were presented one at a time. As each card was presented, the experimenter pointed to each word in turn with a pencil and pronounced it.

No reinforcement was administered to CONT group responses. Under the EXP_1 condition, the first block of cards served to establish an operant level, i.e., none of the first six responses was followed by reinforcement. After the first block, the experimenter reinforced the subject each time he emitted a verb by tapping the pencil on the corner of the table and saying "That's very good!" "Hey! You got another point!" "That's right!" etc., in an enthusiastic tone of voice. The subjects in the EXP_2 condition were administered the same procedure, except that no operant level was obtained, i.e., verb emission was reinforced during the first block as well.

Following the experiment, each subject was asked questions designed to determine his awareness of the nature of the words on each card and the reinforcement contingencies: "Did you notice anything special about the words on the cards?" "Why did you say aloud the particular words that you did?" (experimental subjects only) "How do you think you earned your points?" Further, two tasks were administered to determine the degree to which subjects were familiar with the concept "verb." Subjects were first asked, "What is a verb?" Then they were presented with a card containing two sentences *(All the cats met every morning* and *Bobby opened one eye)* and were asked, "Can you show me the verb in each of the sentences?"

The hypothesis that reinforcing the emission of one verb would increase the probability that other verbs would be emitted was supported when the operant level procedure was omitted, i.e., in treatment condition EXP_2. This result suggests that words comprising a grammatical form class will operantly condition a word response class as well, even when subjects have not learned a common label to the grammatical category.

No subject demonstrated awareness of the response class being manipulated or of the reinforcement contingencies, and none showed any knowledge of the "verb" concept on either of the two verb identification tasks.

The word class properties of verbs demonstrated in this study, as well as the occurrence of paradigmatic associates in word association studies, indicate that some sort of relationship exists among words belonging to the same grammatical form class independent of sentence context. These phenomena suggest that words classified as belonging to the same part of speech are associated in some fashion.

The nature of this association may be that words that are members of a verbal chain of responses, interassociates of each other, or members of the same verbal habit family will operantly condition as a word response class.

Research now being conducted is directed toward the possibility that words in the same form class are members of a habit family: that is, that words sharing common part-of-speech membership all elicit (and are elicited by) a common response. Although it is too early to evaluate this approach, this experiment suggests that if such a common response exists, it consists of something other than the grammatical label "verb."

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The End of Ideology in Behavior Modification

Perry London

When "behavior modifiers" sit at their professional daddys' knees and ask, "Where did I come from?" they are usually told a story about the "principles of learning" that spawned them, the evil clinicians who left them to perish, and the kindly shepherd doctors who found them, raised them, and restored them to their position as the benefactors of behavior. Even if they become disabused of the myth, there remains a tradition of deferring to the principles of learning as the source of all good modifications and a ritual of knocking psychoanalysts, Rogerians, existentialists, and psychiatrists who have not endorsed the jargon of respondents, operants, and reinforcements.

Like most myths, this tale has been based on some true events and has proved useful for promotion of behavioristic patriotism and for extending frontiers of experimentation and growth of the field. But enough is enough. The borders are secure, the settlers are thriving, the forests are cut down, the stumps blown, the fields plowed. It is time to build this domain, not defend it.

Behavior modifiers of the 1960's described their activities as logical corollaries of theorems or principles of learning and of ongoing discoveries about how they applied to disordered human behavior. Actually, there were only about three principles that they referred to, all of which can be reduced to about one principle—that learning depends on the connections in time, space, and attention between what you do and what happens to you subsequently. In addition, the application to human behavior was predicated less on scientific discoveries about learning or about people than on the idea that human neuroses are about the same as animal neuroses. The critical principles of learning involved had all been spelled out between 1898 and 1938, and the business about animal neuroses was posited by Pavlov in the same period.

Evolution of Behavior Modification

The early growth of behavior modification was polemical and political, and most of its scientific hoopla evolved to serve the polemic needs of the people who made it up—not all of it, however, and not only polemical needs.

The study of learning for behavior therapists was always more for the purpose of metaphor, paradigm, and analogy than for guidance about how to operate or about what it all means. Whatever value theory has for dictating laboratory procedures, therapeutic operations are seat-of-the-pants affairs, because they address practical problems that require solutions in fact, not in principle. The disregarding of principles to see what really works reflects the intelligence and scientific good sense of therapists. The search for principles to explain what works reflects their integrity and their anxiety—integrity because only fools would accept their own results without question, anxiety because therapists seek principles as much to increase their confidence as to reduce their ignorance. People also look for principles to help fight intellectual battles. And in the case of behavior modification, it had to be more than an appeal to "what works." Psychoanalysis in particular was based on a pretentious,

respectable, and smart theory. It could not be challenged with less than a theory.

Learning theory was an obvious choice: There is a history of suggested therapeutic applications of learning principles, and the heart of psychotherapy is changing people's behavior without changing their body structures or gross functions—which means teaching them and getting them to learn.

Even so, the evolution of behavior modification did not go neatly. It could not make much use of learning theory, except for the broad principles of learning. Most of the principles do not yet have any systematic application to disorders, and they are more in dispute than naive students realize.

The polemics attacked evident flaws in psychoanalytic and other psychiatric formulations, sometimes getting a little professional jealousy of psychologists for doctors into the act. Their main points were an attack on "the medical model," insistence that the origins of disorder were in learning instead of biochemical or genetic events, the proposition that effective therapeutics should treat symptoms instead of causes, and the demand that even the name of the game should be changed from psychotherapy to behavior therapy.

These arguments are not entirely pointless, but they are not entirely apropos. What makes them irrelevant is that explanatory concepts are only necessary to explain what is going on—and until you know that, you do not need a theory, at least not much of one. Such theory, at this point, has to be stretched to fit facts rather than tailored to them.

The only relevant treatment question is that of the functional relationship between the problem and its solution. The process is what matters.

The real issue is the consequence of the treatment for the person's condition—or his life. Sometimes the issue is prophylactic or preventive rather than ameliorative. This becomes clear by comparing the infectious disease and chronic ailment models in medicine. Behavior disorders are more like chronic ailments, where medical treatment generally aims at the symptoms. The control of diabetes, on the other hand, is not treatment of symptoms, but their prevention. Is the shaping of behavior likewise? For changing the table manners of psychotics' ward behavior, maybe not; for molding children's manners, maybe so. The same question may be addressed to assertive training or to aversion training. Is teaching a homosexual man to attend to women when aroused and to feel repugnance with men relieving his symptom or preventing a disorder (which does not exist legally until he "goes for" the man), teaching a habit pattern or unteaching one, changing a life style, altering a phenomenological field, shifting ego boundaries, redirecting id impulses or superego functions, or cathexis? And if he "feels" different or thinks differently, is it still behavior therapy?

These are silly questions. The change in the homosexual is all those things, depending on how you want to talk about them. Understanding the process is what matters, not belaboring the different styles of talking. The important question about systematic treatment is that of the simultaneous relevance of the treatment technique to the person's manifest trouble and to the rest of his life.

When you eliminate the polemics and politics and gratuities, what remains of theory to define the field and to tell you what it is about? Not a lot.

Behavior Modification as Technology

But if behavior modification lacks theory, then is it not reduced to a technology rather than a science? Yes it is, and I believe that is what it should be, just as medicine is technology rather than science.

The argument that behavior modification should view itself as technology is not meant to denigrate the importance of theory. Theory is valuable because it directs the systematic search for new information by interpreting and integrating what is known. Heuristically, theory is valuable because it lays our biases out in the open and, by explicating them, makes it easier for us to disavow them when they are found to be inadequate.

With respect to behavior modification, is current theory good (scientifically)? Is any theory useful for the current development of this field at this time? The answer to both questions is "no."

In reality, behavior therapists never had so much a theory as an "ideology." What behavior therapists called theory served as bases for commitment or a rallying point for talking about disorder and treatment in a certain way and acting on it within particular sets of limited operations, that is, technical limits. In this case, the commitment is to the functional analysis of problems. And for this reason the domain incorporated within the legitimate purview of the field becomes broader and broader and the polemics milder and milder.

What results from the increasing functional analysis of problems is an increasing number of plausible methods for coping with them—until the proliferation of methods is tested and found to work, no theory is really necessary to explain why they work. None may be needed even then, if they work well. In any case, theory will grow from practice and practice from instrumentation, in the broadest sense; this will happen to behavior modification just like it did to psychoanalysis, but with two generations' more experience, the results, we hope, will be more scientific.

The status of theory comes largely from the belief that technique develops out of theory—that science underlies engineering. But this is only partly true even among "hard" sciences, less so among "soft" sciences, like the social and behavioral sciences, and not at all for many endeavors where the existence of the technological capacity and the practical need is what produces the technical application and, indeed, what "nourishes" much of the theoretical development itself.

This does not mean that the alternative to rude theory is rude empiricism; rather, it suggests a close-to-the-situation functional analysis instead of a search for principles from which to get overextended, or for an ideology to which to be committed. Such a development seems to be proceeding now, with practitioners using the techniques of behavior modification but declining the identity, and scholars recommending heterodoxies like "technical eclecticism" without shame.

What Does All This Mean?

There seem to be two kinds of conceptual schemes which characterize behavior modification. These concepts fit the lower end of the scale of certainty whose upper rungs are called "theories" and "laws." A scientific law is an idea that seems to comprehend all the facts it talks about; a theory is one that hopes to do so, but is not so compellingly known to do so. The activities involved in behavior modification are a good distance below both

those points on the continuum. A few are paradigms or models, ideas that explain a group of facts pretty precisely; most are metaphors or analogies—ideas that look like they might fit a group of facts, where there is no clear evidence that they do.

The treatment methods derived from speculations about conditioning studies of animals are metaphorical or analogous, especially desensitization and implosion, or flooding. The treatment methods that fall under the heading of education or training or "instrumental learning" are paradigmatic or exemplary, including modeling, shaping, and aversion techniques.

The difference between the metaphoric and the paradigmatic treatments is not in how well they work, but in how well their workings are understood. This reduces to how much of the mechanics involved can be predicted or explained with what degree or precision, which reduces to how many details are visible or can be inferred with different degrees of correlation. For practical purposes, the difference is one of the extent to which you can see what is going on enough to figure out how variations in your approach will affect it.

Desensitization is only a metaphor or analogy to conditioning: It involves a specific cognitive process (language) that classical conditioning does not; it involves a mechanism of sequential imagination that can only be guessed at from conditioning studies; and it is subject to a variety of successful variations that could not be predicted from the situations from which the metaphor was derived. Finally, desensitization does the same thing that implosion or flooding does, though it appears to be an opposite method.

Implosion is a better analogy than desensitization but it is metaphorical nonetheless because it is between people, and is administered in social situations where the pressure not to escape is coming from the thoughts that the patient has about the same situation, not from physical restraints on his action.

Shaping is more exemplary of paradigmatic than conditioning treatments —modeling, likewise. Both shaping and modeling can aim for precision in establishing the conditions that will work the desired effects without having to worry much about what is going on in the person that makes them work. Aversion treatment is more paradigmatic than metaphoric because its critical stimulus is not cognitive; that is, it hurts the patient.

Neither metaphors nor paradigms are scientific theories, but both are useful intellectual tools. Metaphor and analogy are good heuristically—they help to turn images into thoughts and inchoate hunches into articulate propositions. Paradigms are more useful—they model to scale what you need to do, or give a mathematical formula into which you can put specific quanta.

Whatever scientific concern people have about the intellectual status of behavior modification, at this point none of the material is very important to practitioners and barely important to clinical research. What is important is the development of systematic practice and of a technology to sustain it.

New equipment, new drugs, new gimmickry and gadgetry should be the basis for systematically developing new methods of behavior modification and for streamlining the techniques with controlled testing. Instead of looking for new principles, or justifying old ones, we should look for new applications.

Technology promises to turn metaphor to paradigm, if not paradigm to theory, by going into the black box and doing funny things to it and by bringing the black box out into the open where we can see what has been happening in it. For the former, I refer to drug research and to work on electrical stimulation of the brain. These activities undercut specious distinctions between learned and unlearned patterns, either by manipulating the patterns out of hand or by potentiating learning so effectively that the issue of its importance disappears.

Bringing the black box out into the open is one result of biofeedback research, and probably the best illustration of technology feeding science, as it enhances practice. All the biofeedback methods work on a single principle, whether they teach people to ring buzzers from a switch in their heads or to alter their blood pressure by monitoring lights and gauges. The principle is finding a means of externally recording some internal process, and projecting that record into the person's consciousness so that he can see or hear what his blood vessels are doing. Then let him learn to manipulate his conscious sensory experience in whatever way people learn to do anything consciously—something about which we know next to nothing.

The clinical value of biofeedback methods remains to be seen and will not be what alpha-machine hucksters seem to wish. Its clinical utility is not yet the point, only its technological sophistication and the scientific potential that comes from that.

But the development that I am suggesting is not limited to hardware and is not self-generating, but reaches to the systematic exploration of all kinds of therapeutic things without inhibition or concern as to whether they fit ostensible principles of learning, or reinforcement, or whatever, but with a singular focus on whether they fit the facts of human experience. For example, there are imagery exercises for depression; thought control for whatever it works for; hypnosis for all kinds of things; exaggerated role taking; differential relaxation; covert sensitization for aversive imaging; and penis squeezing for premature ejaculation. It would take a genius or a madman to shelter this array of techniques under the umbrella of conditioning, or learning, or any single psychological theory. It would take a fool to want to. The first issue, scientifically as well as clinically, is the factual one—Do they work? On whom? When? The how and why come later.

With the era of polemics virtually ended, the political utility of learning theory is ended. It was never theory anyhow, as we used it, but ideology for professional purposes and mostly metaphor for clinical ones. It is time now for the remedial branch of this business to stop worrying about scientific pretensions, in the theoretical sense, as long as it keeps its functional nose clean, and to devise a kind of engineering subsidiary, or more precisely, a systems analysis approach to its own operations. We have gotten as much mileage as we are going to out of old principles, but we have barely begun to work the new technology.

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Self-Control: A Behavioristic Excursion into the Lion's Den

Frederick H. Kanfer and Paul Karoly

Historically, clinical psychology and personality theory have been oriented around conceptions of internal causation; the origins of action being localized, first within the *soul*, then the *psyche*, the *instincts*, and the *mind*. In contemporary theory, the *self* has been viewed as the pilot of individual behavior. These internal agencies have been characterized as multileveled, hierarchically organized structures, relatively free of the influence of situational determinants. Self-determinism and the doctrine of free will and individual responsibility are descendants of the internal causation hypothesis. An active, directive, and aware mental apparatus knows the environment, represents it symbolically, and relates to it dispositionally.

By contrast, experimental psychologists have advocated an environmentalist position. They have questioned the intrapsychic view, arguing that a person's momentary behavior is best understood as a result of the influence of the setting, learning history, and transient organismic states. Within clinical psychology, this position characterizes the foundation of the behavior therapies.

A scientific view need not deny the importance of self-awareness, individual responsibility, and purposefulness of one's life. However, such a view maintains that the behavioral events to which these terms sometimes refer are the product of acculturation, the response to the existing social order and social demands. Thus, what are labeled as man's purposiveness, self-actualization, or morality are not innate characteristics of a newborn infant. They are learned behaviors maintained over generations because of their utility in maintaining the relationship between an individual and his social unit. It is conceivable that the total social repertoire of persons, their self-attitudes, perceptions of the "nature" of man, and the essential purposes of life can be altered by appropriate arrangement of the cultural milieu.

Sources of Control

The concept of *self* is found in the writings of the Greek philosophers, and to this day refers to a consistent, unitary structure or force that differentiates individuals and guides their thought and action.

For the environmentalist such terms as *self*, *ego*, or *intrapsychic structure* represent mental way stations, superfluous byproducts of a labeling process. Environmentalists assert that the scientific analysis of behavior can only be impeded by systems that emphasize the inaccessible and the complex. For the strict behaviorist, control is a matter of specification of relevant antecedents and consequences of a given behavior.

Recent efforts to expand the behavioristic model have included the substantive aspects of phenomena that have been emphasized by nonbehavioral theories. Behavioral analysis and research methods have been applied to the phenomena in vivo in laboratory analogies. For example, the areas of observational learning, of aggression, of group interaction, of achievement, of thinking and perceiving have been drawn into descriptions of the psychological processes from a behavioral or social learning framework.

The issue of control has centered about the definition of a vague boundary between acceptable and unaccept-

able social (external) influences on individual behavior. It is asserted that our society should allow the individual to express himself and to maximize his range of choices, while minimizing the negative consequences of individual expression as it encroaches on the "freedom" of others and the stability of the social order. But, what is the measure of excessive control? Some object to the pervasiveness of control, while others reject the use of some means of control for any purpose. Those who deplore control by social agencies have usually appealed to an inner sense of righteousness (morality, conscience, "superego") to provide for regulation from within. This sense of right and the structures which support it are believed to act as a safeguard against undue or unnatural constraint from without.

From a radical perspective it is possible to visualize a society in which environmental control (supplemented by genetic and pharmacological engineering) would extend over most of a person's behavior. But three factors mitigate against such total control: the ultimate biological separateness of organisms, the continuity of their unique histories, and the inaccessibility of patterned "within-the-skin" stimuli and responses to the observations of others. Some of the influences on behavior thus might be sorted out into those that originate in the immediate environment and those that stem from a person's application of learned techniques of behavior control. The remaining problem lies in the fact that external controls are frequently inconsistent, thus setting up both positive and aversive consequences for the same behavior. The cigarette smoker is reassured by tobacco company ads, but frightened by American Cancer Society pamphlets. Restaurants and weight-watcher clubs vie for control of the obese person. And guardians of morality and pornographers hold out diametrically opposed reinforcers for exposure to sexual material. A behavioral theorist would speculate that these conflicting external stimuli create the same problems that "self-control" is intended to solve.

Cultural Implications of Self-Control

The relative success of behavioral approaches in relating action to external variables has overshadowed the attempts to explicate behavior that is relatively independent of momentary environmental influences. Personality theorists who have used introspective analysis have obfuscated this area by contaminating the method with the content (e.g., in interviews or some personality tests). While psychologists have related self-regulation to the axiomatic statements in their image of man as inherently self-directing or have ignored this feature of men, social anthropologists and futurologists have dealt with the concept in a manner that suggests the need for its reappraisal in psychology. The futurologists believe that the rapid rate of changes in life settings associated with sociological, cultural, and technical innovations and experimentation call for a reconsideration of the role that self-determination can play. The transience of interpersonal relationships, of the social influences and demands in the late 20th century western world, and the probability of an increasing rate of change calls for reconsideration of the concept of adjustment and the relevance of self-regulation as a process that orders behavior in the social surrounding. Personality theories that presume a central role for enduring traits, structures, individual responsibility, and free choice may have appeared less inadequate for social

situations in which contextual determinants were constant. The increasing change pattern calls for a realistic recognition of the importance of the situation-person interaction in the understanding of individual behavior. It raises the possibility that the self is a transitory behavioral organization, subject to alteration by changes in models, available satisfactions, environmental demands, and other features associated with our rapid cultural changes.

A behavioral view suggests that, if individual consistency is required for adaptive living, then increased variability in situations will require more emphasis on the individual's development of self-generated motivations and standards and means for maintaining such consistency. Implicit in these expectations is the necessity for working toward new values and rules for individual responsibility to replace the emphasis on conformity to rules and to modify our yardsticks for judging self-regulation as adequate or deviant. Many clinicians have encountered indications of this change in the increase of problems of "impulse control," earlier regarded as signs of constitutionally determined deficiencies in self-control. The high frequency shoplifting, violent aggressive behaviors, or failures to tolerate aversive conditions for even brief time spans demand a reexamination of the origin of these acts.

Toward a Conceptual Analysis

Reinforcement contingencies provided by social and natural events continuously modify a person's behavior. At times, conflicts arise, involving the presence of two responses with near equal consequences, or one response with positive and aversive outcomes. Extensive studies have suggested techniques for conflict-resolution. Among them are altering reinforcing magnitude for one of the alternatives or the single conflictful response; punishment; removal of all discriminative stimuli. Given the inconsistencies of reinforcing practices in our culture and the impracticality of continuous monitoring of external agents, persons are expected to develop techniques for initiating controlling responses on their own. Generalized reinforcement is given for such achievement throughout a child's socialization. These observations have led behavioral writers to postulate that a person can be taught to control the variables that alter his behavior and research has supported this assumption. What remains to be explained is the process by which an individual breaks the chain of behaviors at a particular point, initiates controlling responses (learned in similar situations), and maintains the new response chain, even though the controlled behavior has a high probability of occurrence and immediately reinforcing consequences.

Alpha- and beta-regulation—To avoid the connotations of the term *self,* the label *alpha* will be assigned to that portion of multiple sources of behavior control that depend on the direct influence of the external environment, while the term *beta* will signify the moderating psychological processes that supplement an input-output relationship, on the basis of the person's past history, biological constitution, and his pattern of generating "internal" stimulational processes. The degree to which internal stimulation and self-generated reinforcing events take on importance depends upon the magnitude and specificity of these variables, and on the richness and complexity of the person's covert behaviors as they moderate and interact with the effects and

directions of external events. Further, since verbal, imaginal, and other "inner" behaviors are postulated to have been established by external contingencies, these behaviors are presumed to follow the same rules of acquisition, maintenance, and extinction as publicly accessible behaviors. Finally, it is assumed that these behaviors can be trained by systematic external regulation so as to provide the most effective augmentation of the behavioral input-output loop, constituting what has been called the self-directing or self-reflective function of man.

In using response-centered cybernetic concepts we are borrowing a paradigm that has been employed in other sciences and disciplines and whose psychological implications are evident in experimental psychology, clinical psychology, and social learning. The system analogy is not used to imply any further simile between man and machine, nor to reflect on the behavior units of which the system is composed.

Beta-regulation—The concept of self- (beta-) regulation is concerned with the processes by which an individual alters or maintains his behavioral chain in the absence of immediate external supports. In this approach beta-control is viewed as a special case of beta-regulation in which the goal is to alter the probability of executing a final response in the chain. Individuals never cease to be affected by alpha variables. It is the human potential for supplementing these effects that makes analysis of beta variables so critical.

When conditions are such that behavior chains are not run off smoothly, self-monitoring is hypothesized to go into operation. Utilizing the input from the external environment as well as response-produced cues, the person is in a position to make a judgment about the adequacy of his performance relative to a subjectively held standard criterion. Within the limits of an individual's social learning history and current situational factors, the judgment serves as an S^D for positive self-reinforcement (SR+) if the outcome of the comparison is favorable, or for self-presented aversive stimulation (SR−) if the comparison is unfavorable. Thus, behavior is maintained or altered by self-reinforcements, relatively independent of current alpha variables.

Beta-control is viewed as a process involving the introduction by the individual of supplementary contingencies designed to enable a person to alter an ongoing behavioral chain. To make the unexpected happen, to act counter to the immediate contingencies, to move from automatization to deautomatization of behavior, a change in one operation in the beta-regulation model is required: The individual must set up an ad hoc performance standard to guide his behavior. We call this element a performance promise or contract. In beta-control situations the individual makes a contract, i.e., specifies performance criteria. This process can be covert, or overtly made in interaction with another person. The antecedents of beta-control lie in the discrepancy between self-observation and the performance promise, followed by self-reinforcement aimed at reducing the discrepancy.

The Scope and Limits of Beta-Control

Most descriptions of self-control have been anchored in the judgment of observers who note sudden large changes in the probability of behavior, or responses that are infrequently made under the given conditions. Lacking information about variables effecting these changes or controlling

the behavior, the term self-control has been applied in the labeling of insufficiently analyzed events. Beta-control always involves a situation in which it is possible to engage in behaviors that are judged to have a high probability, but a response of lower probability occurs. Typically, we are concerned with increasing the probability of approach to or tolerance of an immediately aversive situation in order to achieve a long-range positive outcome; or decreasing the probability of approaching an immediately rewarding situation in order to avoid long-term negative outcomes.

When the response to-be-controlled loses its pleasurable or aversive consequences, then beta- control is no longer relevant. Also, if the situation compels a change in the probability of a response, then beta-control is not involved. If a person remains in the presence of an aversive stimulus because there is no escape, or if he fails to partake of reward because the consummatory response also brings on punishment, he has not executed beta-control. Once an obese person has put a lock on the refrigerator or the alcoholic mixed an emetic in his drink, alpha variables are sufficient to account for the resulting behavior.

In addition, a highly probable but undesirable response could be countered by providing the person a more probable response that is socially and personally acceptable. Thus, a smoker might be influenced to give up tobacco if (assuming he is sexually oriented) sexual experiences could be offered in all situations that have led to smoking. This solution is inadequate, especially if the response to be eliminated is at high strength and has a long history of occurrence. Also extinction theories do not agree that opportunity for a stronger response would reduce the frequency of a lesser response once the more potent reinforcer is no longer available.

Observers have attached such labels as courage, stoicism, or self-denial to some behaviors. If these do not have conflicting contingencies, then the phenomenon falls outside the definition of beta-control. Many a war "hero" has repudiated the intentions attributed to him regarding his behavior under fire. The critical element in beta-control is the person's actions toward altering a strong externally determined pattern of present behavior to meet a criterion that the person has previously set.

Beta-Control in Behavior Therapy

Some of the difficulties surrounding the clinical use of beta-control are easily inferred. For example, the clinician must take care to analyze the relative contributions of alpha and beta variables to the client's behavior. For some behavior patterns—alcohol or drug addiction—it may be necessary to induce a contingency conflict (i.e., to equalize positive and negative consequences of the behavior) rather than to assume such motivational underpinnings. Powerful external reinforcers (alpha variables) may have to be used to strengthen the client's capacities for initiating beta-control. And, differences in the client's use of positive and negative self-reinforcement in a self-change program must be taken into account.

Additionally, when contracted negotiation is seen as a component of beta-control, it becomes clear that a therapist cannot simply teach his client a set of techniques for behavioral changes. Whether the client uses this training will depend on the effects of the same variables that influence all interpersonal negotiations. Interest in contractual arrangements in the therapeutic setting is evident in the psycho-

analytic model, in the interpersonal model, in a group-analytic model, and in a dyadic-interactional model. The contract also is known within a behavioral paradigm and has been proposed as a fundamental adjunct in an encounter or sensitivity-group context. In our theoretical model the contract occupies a special position, reflecting the performance promise, a central component in the beta-control process. It is used as a means for expediting change, and its role is scrutinized in a behavioral analysis.

We now can ask several questions: What are the relevant antecedents of contract making? Under what conditions are contract or intention statements not likely to be made? And, under what conditions are intention statements likely to lead to action?

The Promise as Verbal Operant

When an individual makes a contract covertly or with another person (his therapist), the standard or performance promise emerges as a statement of intention. Such statements may be viewed as verbal operants. The dangers of inferring intentions from actions have been widely discussed; yet, less obvious are the tactical errors that can result from ignoring the discriminative and reinforcement nexus within which overt and covert statements of intention may occur. The intention statement may be a critical component of a beta-control sequence, or it may be a terminal link on an alpha-controlled chain leading to a courageous-appearing declaration and social approval.

Some factors that promote intention-statement making include:

When an individual responds to cues in his environment ("external" or "internal") that signal the conflictful nature of a current behavior pattern.

When a person is suffering from the aversive effects of the behavior to be controlled.

When the individual is satiated with respect to the undesirable behavior.

When contingent social approval for intention-statements is easily available. Even in the absence of conditions conducive to intention statement making, an individual with a positive history for their emission can be expected to show high probability of employing them. There are several conditions that would lower the probability of verbal intention operants. These may be employed for therapeutic purposes. They include settings in which:

The probability of social disapproval for intention statements of a specific sort is high.

The probability of execution of the controlling response is generally known to be low.

The general expectancy for ultimate reinforcement (payoff) for executing the controlling response is low.

The person has a history of prior unsuccessful execution attempts and has developed "learned helplessness."

Strong punishment is attached to the possible nonfulfillment of the intent.

The probability of initiating behavior that leads to fulfillment of a contract is a complex function of the following factors:

Explicitness or clarity of the contract (emphasizing the need for specifying the desired outcome in some detail, providing performance standards for facilitating self-evaluation, delineating consequences, and outlining methods for the achievement of the desired goal).

Mutuality of control in the helping relationship (relating to the therapist's ability to uphold "his end" of the

contract via the judicious use of alpha control).

Persistence of the aversive consequences of the undesirable behavior beyond the time at which the intention operant is emitted.

The individual's skill and experience in making the instrumental responses required for contract execution.

Continuous use of (and/or training in) self-monitoring that permits behavioral gains or losses to have their maximal motivational impact.

Past experience as a basis for the expectation of success or failure of a beta-control program.

The clinician should be on guard against reinforcing performance promises if they undercut behavioral fulfillment and provide support for behaviors that obviate beta-control. Also, in order to assist a client in achieving beta-control, a therapist must initially exercise a large amount of social (alpha) control over his client's actions and choices.

Implications and Research Directions

Our analysis has suggested that the term self-control, originating in a dualistic image of man, does not offer a useful conceptualization of the phenomena it purports to describe. Recent behavioral approaches to other personality variables suggest that a more fruitful attack would be to investigate the events in question by sorting out the component controlling variables on the basis of their source. As the combination of immediate external influences and self-generated stimuli shifts toward the former, alpha-control describes the dominant sources of influence. With a shift toward self-generated processes, beta-control takes on predominance. In human behavior, the occurrence of either extreme is probably rare and limited in time. At any moment the learning history may be more or less influential than the controlling features of the immediate environment. When the degree of alpha control is reduced or the subject is given opportunity to exercise control over his behavior, changes in the controlled behavior have been reported.

Several research projects are available that test the various facets of the contract concept as related to beta-control. Of importance is continued research regarding the factors influencing the negotiation of contracts in interpersonal settings, especially the genesis of commitments. Contract psychology gives renewed importance to the patient-therapist relationship. The examination of individual differences in such areas as skill in exercising beta-control, cross-situational beta-control, goal setting, self-monitoring, self-reinforcement (and self-punishment) patterns, and interpersonal styles would be helpful in explicating the beta-control process.

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Token Economy Programs in the Treatment of Hospitalized Adult Psychiatric Patients

Carl G. Carlson, Michel Hersen, and Richard M. Eisler

The token economy as a motivating environment for psychiatric patients is an example of the application of principles derived in the animal laboratory to complex human behavior. The antecedents can be traced to methodological arguments for an experimental analysis of behavior, with derivation of principles of behavior change from research with lower organisms.

Operant Techniques with Psychiatric Patients

Concomitant with theoretical analyses, early studies examined the feasibility of employing operant conditioning techniques with chronic adult psychotics. These studies were analogs of rather elementary animal experiments, in which lever-pulling responses by patients were reinforced with various stimuli including cigarettes, candy, and pictures. The results indicated that simple motor responses could be controlled under differing schedules of reinforcement. In later work, response characteristics that differentiated between psychotics and "normals" and contributed to the psychotic's more varied performance were identified. These efforts were followed by investigations in which a specific behavioral principle was employed to modify more clinically relevant behaviors in psychiatric patients.

Development of the Token Economy

The first report concerning the development and application of a token economy program for an entire psychiatric unit demonstrated that a token economy system of ward management could maintain work behavior in female chronic psychiatric patients. All patients could earn metal tokens by completing work assignments on and off the ward. Tokens could be exchanged for privileges including privacy, off ward leave, interaction with selected staff, church attendance, attendance at recreational activities, and purchase of commissary items. When privileges were accorded on a contingent basis, job performance was maintained at a high level. When privileges were issued on a noncontingent basis or shifted for performance on a different work assignment, a decrease in productivity on the initial job was noted.

Range of Treatment Settings and Populations

Since the introduction of token reinforcement programs, there has been a proliferation of studies extending these procedures to a wide variety of subjects and treatment settings. Subjects have included chronic psychiatric patients, acutely disturbed psychiatric patients on an open ward service, patients in a maximum security hospital, those in rehabilitation settings, and alcoholics. Token economies have been adapted for hospitalized "delinquent" soldiers, institutionalized adolescent delinquents, retardates, problem children in "normal" classrooms, and in the treatment of marital dyads in outpatient psychotherapy. Diagnoses of patients treated under token economic systems include organic, psychotic, neurotic, and personality disorders.

This suggests the extent to which the token economy has been applied. Recent reports indicate that over 100 token reinforcement programs have been instituted within the last decade.

In the Veterans Administration alone, a survey identified 27 separate token economy programs in 20 facilities.

Characteristics of Token Economies

Token economy programs all share common characteristics. Multiple target behaviors are specified, with time limits, frequency of occurrence, etc. defined. Tokens (tangible objects such as cards, poker chips, metal coins) or points in "point economies" are used as the medium of exchange. Theoretically, tokens or points function as generalized secondary reinforcers. Indeed, previous work with lower organisms demonstrated that tokens could be established as conditioned reinforcers by pairing them with primary reinforcement.

There are advantages in employing tokens as reinforcers in shaping human behavior on psychiatric units. The immediate administration of tokens avoids delay of reinforcement that might be necessitated in providing a primary reinforcer (e.g., meals). Use of tokens permits the continued reinforcement of desired behaviors without interruption of activity that might follow delivery of a primary reinforcer. The pairing of tokens with a variety of reinforcers (commodities, activities, privileges) minimizes loss of reinforcer effectiveness due to satiation factors or individual differences.

Types of Token Economy Studies

The studies can be classified into five major categories: "demonstrational" studies, within-subject group designs, individually tailored programs, controlled group comparisons, and controlled group comparisons with followup measures.

Demonstrational Studies

In one of the first reports of token economy wards for psychiatric patients in a State mental institution, the patients received tokens for prompt attendance at ward activities, personal hygiene, and specified work assignments on and off the ward. Tokens were changeable for more attractive eating and sleeping accommodations and for minor privileges. Development of greater activity and social interaction subsequent to initiation of the program was reported.

In a more unusual application, a token economy program for a ward of alcoholics was developed. Although the program was not specifically directed toward treatment of alcoholism, an attempt was made to ascertain whether work behavior could be controlled via a token system. Tokens were issued contingent upon performance of hospital jobs and were exchanged for canteen booklets, passes, attendance at meetings, and advancement in ward status. Patients on the token ward averaged an 8-hour work day in contrast to a 4-hour work day for nonproject alcoholics.

A somewhat circumscribed token economy program was applied to a ward of 34 severely regressed and violent female patients. Meal attendance and behavior were controlled. Access to the dining area was gradually restricted for appearing late to meals, with violent patients being evicted. Patients could earn tokens, exchangeable for a "treat" from a food cart, when they successfully completed specified arising and retiring behaviors. The number of patients missing meals was significantly reduced, and performance of acceptable bedtime routine increased by 50 percent. In 2 years subsequent to community placement, 28 percent of the patients in the program were being maintained outside of the hospital.

In a token economy program for chronic schizophrenics in a State hospital, patients were placed in one of three ward status levels, the highest

involving working as a hospital employee concomitant with making plans for discharge. The initial level consisted of being restricted to the ward. Advancement to higher levels was determined by tokens earned within specified time periods. Return to a lower level was determined by unsatisfactory progress at a higher level. Tokens were earned for personal care, meeting attendance, and social interactions and were exchanged for meals, desired activities, and luxury items. The investigators reported that 25 percent of the patients had been discharged from the program, and that two-thirds of movements in ward status had been in the direction of increased functioning.

Another favorable report concerned 41 patients on a ward in a maximum security correctional hospital selected on the basis of low rates of activity. Tokens were administered for personal care, attendance at individual and group activities, and work assignments. Tokens were exchangeable for commodities in the commissary. Results indicated that patient earnings of tokens increased over 3 months, although there appeared to be a relationship between token earnings and initial activity level. Despite the voluntary nature of the ward, no patient left the program. Fourteen patients were later transferred to "higher functioning" wards, and two were returned to complete their prison terms (neither had been rehospitalized at the 1-year followup).

Within-Subjects Designs

"Demonstrational" studies do not permit assessment of the magnitude of apparent change or evidence that contingency management is the specific agent of change. Any "total push" program might yield comparable results. Only by systematically introducing, removing, and reintroducing the contingencies can conclusions be reached about the direct efficacy of the contingency in operation.

In a study of 60 chronic psychiatric Veterans Administration patients, token reinforcement effected general increases in activity level and social interaction when compared with baseline performance. The most dramatic improvement was obtained during a 3-month period when the value of tokens was doubled. When the value was reduced to its original level, the level of target behaviors decreased. A total of 24 patients were discharged during the 1st year, but 11 of them returned to the hospital within 9 months.

Another study demonstrated effectiveness of response-contingent tokens with 13 chronic schizophrenic females rated daily on seven classes of personal care behavior. During phases I and III, patients received 150 noncontingent tokens each morning, regardless of their behavior. During phases II and IV, tokens were only issued contingent upon completion of personal care target behaviors. Ratings of personal care were consistently higher under conditions of contingency management.

In another study with chronic female psychiatric patients, tokens were allotted for attending morning exercises, completing the exercises, arising on time, dressing, and bedmaking. During contingency management, these five target behaviors increased in frequency. Coincidentally, two undesirable behaviors (violence and noise) decreased, despite the fact that they had not been specifically extinguished or programed.

A token reinforcement program was used in a rapid turnover open ward consisting of young veteran psychiatric patients. Token reinforcement when combined with incentive bonus tech-

niques doubled behavioral output when compared with output in baseline phases. Several reversals were obtained, indicating effectiveness of the contingency management technique. Performance levels of individual patients entering different phases of the token economy were generally consistent with group performance data.

Individualized Programs

Some patients are unaffected by ward-wide programs as evidenced by their continued emission of symptomatic behaviors. Failure to obtain changes appears to be the result of two major factors: Some patients demonstrate such extensive behavioral deficits that target behaviors are not emitted or are emitted at frequencies too low to show the benefits of reinforcement, and commodities and privileges available as "backup" reinforcers are ineffective or inappropriate.

Major symptomatic behaviors (e.g., delusions, depression, hallucinations) have not been directly modified in most group token economy programs. Indeed, the focus has been on the maintenance of self-care activities, work performance, and social interaction. It is assumed that performance of these activities is incompatible with continued evidence of major symptomatology. However, often in token economy programs, symptomatic behaviors (e.g., delusional speech) are not incompatible with target behaviors but are manifested both in token ward and unrelated activities.

To counteract these difficulties, individualized programs in conjunction with ward-wide operant programs have increased. One application involves the use of successive approximation techniques for patients on a general token economy ward. A second application is characterized by modification of specific problem behaviors evidenced in particular patients. For example, a weight reduction program was established for two obese chronic schizophrenics. These patients received tokens, improvement in privilege status, and social approval contingent on a weight loss of 3 pounds per week. After 7 months both patients achieved their target weights, with one losing 63 pounds and the second 31 pounds. Psychotic speech of a prepsychotic retarded patient was modified in a sheltered workshop token economy system in which the patient lost tokens when emitting psychotic statements. From an initial rate of 39.3 comments per day, the patient's inappropriate utterances were reduced to less than three per day. Following removal of "response-cost" procedures (loss of tokens), psychotic speech remained suppressed, with a mean of 1.2 psychotic comments per day. A response-cost contingency also decreased unnecessary PRN (self-scheduled) medication requests by State hospital patients. When patients had to pay for PRN medications with tokens earned on the general program, unnecessary PRN requests decreased from a mean of 170 per week to 20 per week for women, and a mean of 60 per week to two per week for men.

In a recent study, individualized programs were devised to modify delusional verbalizations in psychotic patients. Token reinforcement techniques were effective in decreasing percentage of delusional speech in chronic paranoid schizophrenics during daily interviews with a therapist in seven of nine cases. As there was no evidence of generalization to other settings, additional programs were developed to reduce frequency of delusional talk on the ward for some of the patients.

Controlled Group Studies with No Followup

In the first evaluation of a token economy program which included a

comparison control group, 40 chronic female schizophrenics with varying degrees of apathy (assessed via behavioral observation) were randomly assigned to two groups. In the "experimental" group, behaviors assumed incompatible with "apathy" (personal hygiene, social interaction, and work performance) were reinforced. In the control group, contingencies were not in effect but ward staff was instructed to continue "routine treatment" in prompting and praising occurrence of target responses. In addition, patients in the control group were issued noncontingent tokens each morning. The experimental group showed a decrease in "apathy" over a 3-month period, whereas controls remained unproductive. Although demonstrating general effectiveness of the token program, differential effectiveness with respect to more traditional psychiatric treatment is not indicated. A recidivism rate of 14 percent for the entire ward program as compared with 29 percent for the rest of the hospital was noted.

A token economy program was compared with "relationship therapy" in a counterbalanced design. Eleven pairs of chronic schizophrenic males were matched on the basis of the Hospital Adjustment Scale. Each treatment condition required 10 to 13 weeks, but no attempt was made to control amount of therapeutic contact. Individual programs were employed in the token economy group, with tokens being exchanged for meals. "Relationship therapy" involved five hourly sessions per week with a therapist, with emphasis on the patient expressing his feelings. Patients improved under both conditions as indexed by measures of intellectual, social, and work productivity, but the token economy program required significantly less staff time.

The behavior of 45 chronic female schizophrenic patients on a token economy ward was compared with behavior of patients on "untreated" control wards. Using behavioral rating scales as criteria, more improvement was found for token economy patients. However, the data do not provide clear-cut conclusions in light of some possible confounding of variables: The specific nature of treatment for control patients was not clarified; the control wards were somewhat "custodial" in orientation; no attempt was made to control for differential attention given to patients on token and control wards; and initiation of the token economy ward required transferring patients to a different ward.

Group Outcome Studies with Followup

In the first controlled group study of token economy in which followup data are presented, psychiatric patients were matched on age, IQ, length of hospitalization, and diagnosis. The control ward maximized custodial treatment of patients, with little attempt at therapeutic intervention. On the token economy ward individual programs were developed for patients, including reinforcement for self-care behaviors, participation in ward government, and "attitude therapy" sessions. With individual programs, successive approximations to desirable "terminal" behaviors (e.g., brushing teeth, working, social interactions) were developed in accordance with initial staff assessments of patients. Followup data for the first 6 months revealed a greater discharge rate from the token economy program but no difference in return rate. After 35 months, 68 percent of the token economy patients had been discharged or furloughed, and 14 percent had returned in comparison to a 50 percent recidivism rate for the entire hospital. While these data are

encouraging, it would have been desirable to provide continuing outcome data from a discrete control group comparison.

Outcome data for patients discharged from two "traditional" psychiatric wards have been compared. A posthospital analysis showed that there were no differences among groups with respect to demographic variables. In spite of this equivalence, the token economy ward discharged more patients with long histories of being hospitalized than the other two wards. However, a comparison of the three units failed to reveal differences in discharge or recidivism rates.

In a recent well-controlled followup study, male chronic patients were matched for age, diagnosis, and length of hospitalization and then were assigned to two physically identical wards. Token economy ward patients received tokens on a contingent basis, whereas control group patients obtained privileges on a noncontingent basis while being maintained on a "traditional custodial open ward environment." One year followup data revealed that significantly more token economy patients were granted indefinite furloughs from the hospital. Also, a smaller percentage of token economy patients were readmitted during the 1-year period.

Methodological Critiques

Several variables need control in token economy outcome research. The first involves the potentially confounding effects of introducing physical changes in the patients' environment. A more subtle problem involves differential staff attention given token economy patients when compared with minimal therapeutic contact offered to control or "no-treatment" groups.

Additionally, it would be clinically more useful to compare effectiveness of the token economy system with a program in which chemotherapy, individual psychotherapy, group therapy, occupational therapy, physical therapy, and milieu therapy are offered in combination. Comparison of an active token economy program with a custodially oriented control group does not permit adequate demonstration of the differential effectiveness of contingency management. In a more ideal evaluation, a token economy ward would be contrasted to an "attention-placebo" group, where tokens are applied noncontingently, and with a more "traditional" milieu treatment group. Such a design would allow for a comparison of relative effects of attentional factors, traditional therapeutic management, and contingency management.

A more important critique concerns the absence of a systematic followup and posthospital treatment in which data are collected from discharged patients at regularly scheduled intervals. Unless steps are taken to ensure that posthospital reinforcement contingencies encountered by the patient are programed to support changes effected during his hospitalization, there is no logical or theoretical reason to assume that improvement will be maintained.

There are several ways to establish a smooth transition from the token ward to the patient's natural environment. Behavioral contracting is one method through which relevant family members are involved in the reinforcement and maintenance of appropriate behaviors. Lists of patient behaviors expected by family members and lists of family members' behaviors expected by the patient are drawn up. Reciprocal agreements between the patient and relevant family members can be negotiated in an "official-appearing" contract, signed by the

patient, family, and therapist. A behavioral training program for relatives would facilitate family cooperation and would elicit group support. When family members are not available, contractual agreements can be negotiated with significant others in the patient's natural environment or the therapist.

For the chronic patient whose social and self-care behaviors have been reestablished, placement into the community might best be accomplished in an intermediary setting (e.g., a halfway house conducted under operant conditioning principles). Although it is difficult to program contingencies in the community, methods exist whereby the token economy can be extended to the extra-hospital environment.

Several conclusions can be drawn:

The development of the token economy has followed a direct historical course which can be divided into three stages: laboratory derivation of basic principles of behavioral change, manipulation of significant behaviors in individual patients, and integration of behavioral principles in managing entire psychiatric wards.

There is evidence that application of contingent tokens is able to effect and maintain significant changes in specified target behaviors.

The use of individualized programs for decreasing symptomatic behaviors (e.g., delusional talk, impulsivity, depression, etc.) is recommended. Similarly, individualized programs are needed for patients unaffected by group token economy contingencies.

Means for extending token economic principles into the patient's natural environment are available but are rarely employed and lack empirical verification.

The need now arises for a comparison of the relative clinical efficacy of token economic management of patients with other active forms of psychiatric ward management.

The ultimate aim of any clinical intervention is the restitution and maintenance of the patient in his home environment. For patients treated via token economy, comparative measures of discharge, recidivism, and community adjustment (family work, education, social) are mandatory for demonstrations of clinical success.

Note: The review on which this condensation is based has a 69-item bibliography.

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Intrinsic Reinforcers in a Classroom Token Economy

Thomas F. McLaughlin and John Malaby

Many studies have used token reinforcement programs for the management of classroom behavior, with token reinforcers dependent upon backup reinforcers such as candy, toys, and comic books not intrinsic to the natural classroom. The cost can be important when considering whether or not to employ such a program (an estimated average cost is $250 per subject). Most studies that employed token programs took place in nontypical educational settings such as an adjustment room, remedial classroom, or a special education class. Also, the number of subjects was small.

This paper investigated effects of various contingencies on assignment completion for an entire class. The methods were dependent on cost-free backup reinforcers in the form of privileges, employed in a public school setting, applied to the total class, and managed by a single teacher.

Members of a combination fifth and sixth grade classroom in a low socioeconomic area were used. Class size ranged from 25 to 29. The senior author was the teacher.

Target behavior—Assignment completion in spelling, language, handwriting, and math was selected for study. Assignment completion was defined as the completion of all exercises or tasks requested by the teacher.

Token economy—First, the mechanics of a token economy were explained to the class. Token reinforcers were points. The students earned points for desirable behaviors and lost points for undesirable behaviors. The teacher often used praise when awarding points. Point removal was done in a calm matter-of-fact manner.

Table 1 shows the number of points that could be earned for various activities. In some instances, the number of points could vary; for example, a student could earn from 6 to 12 points for working the items in an assignment correctly. If a 10-item assignment were answered with 10 items completed and with nine correct answers, the subject was given nine points. An incomplete assignment was never given points. The penalty for undesirable behavior was severe. The values were determined earlier in a similar token economy and represent values which seemed to control the students' behavior.

The points earned were exchanged weekly (or, see Token II) for the privileges shown in Table 2. Activities that were naturally available in the school served as backup reinforcers. The privileges were determined by the students themselves. One period at the beginning of school was devoted to asking which activities the students considered to be privileged. The students ranked the privileges in terms of desirability, and that ranking determined the number of points assigned.

By including Special jobs and Special projects, which could be chosen in any week, and by allowing the student to choose privileges he wished, we felt some confidence in the reinforcing properties of the privileges.

Since the variable of major interest was the number of assignments completed, availability of points was associated with that behavior and with behaviors compatible with it. Assignments were usually made daily for math, spelling, and language; there were three assignments per week for handwriting. The student was expected to complete each assignment

Table 1. Behaviors and the Number of Points That They Earned or Lost

Behaviors That Earned Points	*Points*
Items correct	6 to 12
Study behavior 8:50–9:15	5 per day
Bring food for animals	1 to 10
Bring sawdust for animals	1 to 10
Art	1 to 4
Listening points	1 to 2 per lesson
Extra credit	Assigned value
Neatness	1 to 2
Taking home assignments	5
Taking notes	1 to 3
Quiet in lunch line	2
Quiet in cafeteria	2
Appropriate noon hour behavior	3
Behaviors That Lost Points	*Points*
Assignments incomplete	Amount squared
Gum and candy	100
Inappropriate verbal behavior	15
Inappropriate motor behavior	15
Fighting	100
Cheating	100

by class time. At the beginning of each class, papers were corrected. Each student graded his own paper. At the end of the correction period, the teacher called students to his desk and awarded points for the number of items correct (provided it was complete) and gave bonus points for neatness.

The student recorded these points on a record form on which he kept his point totals. The students could make up the assignment to remove the penalty, but the make-up would not earn points. Approximately 50 percent of the incomplete assignments were made up. The teacher also recorded the points in his grade book to cross-check the honesty of his students. Only one student failed to subtract points for an incomplete assignment.

Points were exchanged for privileges each Monday. A student, acting as banker for each privilege, subtracted the points from a student's point total, initialed it, and turned in to the teacher a list of students who purchased privileges.

By having students keep their own records and make the transactions, and by including simple checks on the system, the token economy was easy to manage. No more than 20 to 25 minutes per week were devoted to the system by the teacher.

Experimental Conditions

The experimental design involved a baseline, three token conditions arranged, and a quiet-behavior contingency.

Baseline—Normal rates of assignment completion were recorded daily for the first 6 weeks of school. Traditional control techniques were used: staying after school to finish work; parent and student conferences; lectures to the class and individual students on the merits of completing assignments. Letter grades were used to grade assignments.

Token I—The token economy was introduced and lasted 75 days.

Token II—This was similar to Token I except that point-exchange days were variable rather than fixed. The time between exchange varied from 2 to 6 school days with a mean of 4.25 days. Point values for privileges were increased proportionately if the time between exchanges was greater than 5 days, and decreased if less than 5 days. Token II was employed twice, once after Token I, and once after the Quiet-Behavior period for an additional 11 days.

Quiet behavior—The teacher informed the class that assignment completion in language, spelling, math, and handwriting would no longer receive points, but letter grades. The student could still earn or lose points for the other behaviors in Table 1. In addition, a category of quiet be-

Table 2. Weekly Privileges

Privilege	*Price in Points*	
	Sixth	Fifth
Sharpening pencils	20	13
Seeing animals	30	25
Taking out balls	5	3
Sports	60	40
Special writing on board	20	16
Being on a committee	30	25
Special jobs	25	15
Playing games	5	3
Listening to records	5	2
Coming in early	10	6
Seeing the grade book	5	2
Special projects	25	20

havior was added and students could earn approximately the same number of points that they had from assignments during Token II. Point-exchange days were variable. The Quiet-Behavior contingency was in effect for 17 days.

Effect of the Token Economy

During the first 28 days before token procedures were introduced, the class completed from 69 to 94 percent of the assignments given. Pretoken records show variability in each area. When Token I was introduced, change in variability of performance occurred in spelling, language, and handwriting. Performance in math tended to remain variable, but the mean percent completed assignments was higher in the baseline period.

With Token II, assignment completion increased. A majority of 100 percent data points were found in all four academic areas and variability was virtually eliminated.

The Quiet-Behavior condition resulted in reduced rates of assignment completion. The rates showed recovery as the condition remained in effect, but assignment completion was variable. The reapplication of Token II again generated high completion rates.

Reactions to the program were obtained. Twenty students rated the economy favorably and five rated it unfavorably. Those who liked the token economy made statements such as: "I completed my work on time easier," "I liked to earn the privileges," and "It made school fun." Negative comments included: "I don't like losing points for not doing my work," "The fines were too high," and "Privileges cost too much."

The methods have practical implications for several reasons: The back-up reinforcers were in the natural classroom environment and were cost-free; the study took place in a typical classroom setting; the number of students was comparable in size with most classloads in a public school; gains in academic completion were obtained without specially made assignments or programed instruction; the token economy was manageable by one teacher, requiring some 20 minutes per week to record points, fines, privileges, etc. The use of the Quiet-Behavior procedure eliminated the necessity for a reversal procedure, which is sometimes unpleasant to the teacher.

Token reinforcement programs have been used in a variety of special settings, but an analysis of their effects on assignment completion behavior for an entire class is not common. These methods using reinforcers natural to most classrooms can be implemented 'by teachers without expense or drastic instructional changes.

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Modification of Vocational Behavior in a Community Agency for Mentally Retarded Adolescents

Raymond J. Trybus and Patricia B. Lacks

That operant-based behavior modification techniques can influence the behavior of retarded persons has been well documented. Most applications of operant methods, however, have dealt with basic skills such as toilet training, dressing, and eating. More recently, behavior modification has been used to develop social skills such as language and interpersonal relations. Undesirable behavior like aggression or destruction has been eliminated mainly through extinction and punishment, while desirable behaviors have been developed mainly through token programs.

In the last few years, attention has turned to vocational training. The focus has been to increase work productivity on simple tasks, at first in schools and institutions, and later in sheltered workshops. The newest research is trying to compare a variety of reinforcing techniques and to develop more sophisticated reinforcers as well as to integrate behavior modification techniques with those of task analysis to teach more complex tasks.

The purpose of our project was to investigate the applicability of operant methods to the vocationally related behavior of noninstitutionalized late-adolescent retardates who live with their families and who present behavioral problems that prevent their entrance into or continuation in community service agencies for the retarded.

The research was done in the Behavioral Training Unit (BTU) of the Work Experience Center of the St. Louis Jewish Employment and Vocational Service. This agency provides a community-based program of vocational and clinical services to postschool mentally retarded adolescents. During the 15 months of this project, 19 clients were served for periods ranging from 3 to 38 weeks. The subjects differed considerably in intelligence, behavior, and background, although each had been classified as mentally retarded. All the clients exhibited behavior problems, making them ineligible for the usual rehabilitation services and keeping their productivity at a low rate.

Training Unit Staff

Three females served as training unit supervisors. None had any training in operant methodology, and their academic background included no more than two courses in psychology. Training consisted of readings, discussions with the psychologist who was the project coordinator, role-playing and discussion of ways of handling specific problems, and observing the psychologist work with a client. When the supervisor began working with clients, the psychologist observed the activities from a booth with a one-way vision screen and a sound system. From this booth he could instruct the supervisor via a "bug-in-the-ear." Gradually supervisor training was reduced to after-hours discussions of especially difficult client problems.

Training Procedures

A token system to raise client production level constituted the major part of the training procedures. This consisted of rewarding increases in production with poker chips that could be exchanged for reinforcers. Reinforcers included edibles, break time, time talking with a counselor, money, cigarettes, opportunity to select a work task from two or three alternatives,

opportunity to "rent" a chair to sit down while working, privilege of being involved in a new procedure such as cueing lights, and choice of a preferred work location, among other rewards. The selection was made known to the clients in the form of a list and an initial discussion, followed by reminders or suggestions.

At the same time that productivity level was being increased, other target behaviors specific to each client were selected for change. This selection was done through observation of individual clients, combined with referral reports and previous knowledge of the client. These behaviors were easy to select since they were obvious and constituted the reason for referral to the BTU.

These target behaviors were also altered through the use of the token system. Another major reinforcer was giving or withholding of supervisor attention, which was a powerful reinforcer for many subjects. The supervisors in the BTU had to learn the difficult task of not noticing the antics of some clients who went to extreme lengths to gain their attention, e.g., bending over backwards and placing an upturned face in the supervisor's lap. Attention was given as soon as the antics stopped and the subject resumed appropriate work activity. In only one case was it necessary and appropriate to resort to punishment to produce desired changes.

Only one "gadget" was used, a set of cueing lights. A yellow or positive light was used either continuously or intermittently to accompany appropriate behavior; inappropriate behavior was accompanied by a red light and buzzer. The two states discriminated by the lights sometimes involved correct versus incorrect method of performance of a task, but more often the lights indicated the length of time taken to perform a task. For example, a client might start out averaging 85 seconds to do a task. If standards indicated that the task could be performed in 15 seconds by a normal worker, the yellow light would be used to denote any occasion when the task was performed in 85 seconds or less. Longer times earned the red light and buzzer. Later the criterion time would be lowered to 80, then to 75, then 70 seconds, and so on.

With the exception of the operant techniques, the BTU was designed to simulate a typical sheltered workshop as much as possible. Upon arrival in the morning each trainee would punch his time card, then enter the experimental room where he was met by the supervisor who assigned his work task. The task might continue throughout the day and frequently extended over several days. All tasks were simple, repetitive assembly or packaging tasks typical of local sheltered workshops. Actual contract work was used whenever possible. This was supplemented by tasks constructed specifically for training purposes. These tasks were used in three cases: when the trainee needed a specific type of activity, when his work was of such poor quality that it could not be used for real contract purposes, or when contract work was not available.

Tokens were administered to clients in two ways: upon the performance of behaviors specified for each individual and on a variable interval schedule in the following manner. A kitchen timer was set for variable intervals with a mean for the day of 10 minutes. Whoever was engaged in appropriate work activity at the moment the bell sounded received a token. Tokens were placed in a container in front of the client and could be spent at specified times during each

day although certain reinforcing events (e.g., participation in craft activities) occurred only on some days.

In order to demonstrate experimental control of clients' behavior, the following procedures were employed whenever possible: a "Baseline—First Training Period—Reversal—Second Training Period—Follow-up" paradigm. *Baseline* involved assignment to a task and occasional checking by a supervisor, a situation as close as possible to that encountered in St. Louis sheltered workshops. Training periods consisted of the token reinforcement system. During *Reversal* the token reinforcement systems put into effect in the first training period were continued but with reversal of the conditions needed to earn the reinforcers. Thus, if increasing speed of production was rewarded during training, decreasing speed of production was rewarded during reversal. Return to Baseline conditions meant a discontinuation of the token system. Finally, a 4-week Followup was planned for each subject.

Effects of the Techniques

Generally positive results were achieved. For example, one client, confined to a wheelchair, used the wheelchair as a weapon to corner others, bumping them in the shins. Upon entrance to the BTU he was assigned to a regular chair during working hours, thus making impossible his misbehaviors. After a number of weeks when he had established the pattern of more appropriate behavior in the work situation, he was allowed to purchase use of the wheelchair with his earned tokens. Any misbehavior while in the chair immediately terminated this use with a matter-of-fact restatement of the contingencies involved.

Another girl whose IQ was 31 engaged in autistic behavior such as talking to imaginary people and talking to the ceiling while playing with her fingers. After 12 weeks in the BTU, this client's behavior changed to the point where she responded normally to other people and did not exhibit her autistic mannerisms.

One illustration of our clients' pride in their new-found skills was a male client who had a history of very explosive behavior and had always been in trouble at school. As he began to make progress in the BTU, he was so delighted that each day he would go back to his school to tell his former teacher about each new success.

Followup of our 19 clients reveals that nine are placed in sheltered workshops where they are producing at rates typical for their shops and are not exhibiting any unmanageable behavior problems. This improved functioning benefits not only the client, but also his family, who would otherwise be charged with the care of a difficult-to-manage person 24 hours a day, 7 days a week. Of the remainder, seven have returned home or to the state hospital; information could not be obtained for three.

In attempting to analyze why approximately 40 percent of our clients were not able to succeed in a sheltered workshop, it is important to understand that the improved behavior seemed to be brought about by the more favorable environment that the operant techniques provided rather than by any permanent changes within the client himself.

A person becomes labeled as "retarded" in our society because the behavior elicited from him by the ordinary social, work, and learning environments is different and inadequate by comparison with the behavior of most people in those same situations. The task thus becomes one

of constructing an environment capable of eliciting more desirable kinds of behavior from the individual.

While clients were in the BTU, some attempt was made to maintain this improved environment for clients at home through consultation with their parents. For example, it was found useful to arrange consequences at home for behavioral improvement in the BTU, or vice versa. In one case, persistent enuresis at work was changed by making a home-provided reinforcer contingent rather than noncontingent. The client was allowed a bottle of soda at home every afternoon. By making this soda contingent on a report of a dry day at the BTU, control of the enuresis was obtained in 5 to 6 weeks. This continued for over 6 months without incident and even after the daily soda was no longer available.

Some clients had to return to unchanged home situations, sheltered workshops, or both, where operant techniques are not used. Sometimes, in the workshops where clients are placed, there is almost a reversal of the operant contingencies used in the BTU. Clients receive no immediate reinforcement for their work or "good behavior," other than a paycheck twice a month. Sometimes, even less money is more reinforcing than more money as in a situation where nickels are more desirable to clients than quarters because the soft drink machine will not take quarters. In addition, personal attention, one of the most powerful reinforcers, is usually in short supply in a sheltered workshop and is typically given to clients when they "act out," rather than when they are behaving appropriately. This use of attention would reinstate in short order the client behaviors that were extinguished in the BTU.

One final issue remains: the difficulty of objectively documenting the successes of the BTU. Previous behavior modification studies in rehabilitation have suffered from multiple research methodology shortcomings. We attempted to overcome these deficiencies, but service and administrative needs frequently took precedence over the research. The biggest difficulty was that the operation of the program was dependent on client fees rather than independent funds. Hence, the time that clients could spend in the program was not determined by the research, but by vocational rehabilitation policies and the availability of funds.

Finally, research needs were sometimes in conflict with client needs. For example, Reversal period is a necessary condition if you are to show that the client's behavior is truly in the experimenter's control and is the result of the operant techniques. In our study, Reversal might be intended for 1 week but it would work so well in lowering production rate that the client would be falling asleep by the 3rd day. Or, Reversal periods would disrupt the gains a client had made in the original Training period. When these gains were the first signs of progress in many months of service to a difficult client, the Reversal condition was difficult for service personnel to accept.

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Behavior Modification in the Mental Hospital: Assumptions and Criticisms

Morgan Martin

Two problems facing most public mental hospitals are the greater visibility of long-term patients as the result of unitization and the increasing number of drug-dependent patients. For both these groups, behavior modification carries great promise. In addition, it provides a stimulant to staff and a chance for the discipline of psychology to assume more leadership.

At the same time, behavior modification is controversial, is based on questionable assumptions, and has a particular peril for so readily criticized a public business as a mental hospital. From some observations on behavior modification in general and from our experiences at Norwich Hospital, which now devotes about one-fourth of its wards to behavior modification programs, we can consider some of the criticisms of this approach.

Half of the nation's public mental hospitals have projects based on behavior therapy concepts. Although programs have been in operation since the early 1960's, little of what is reported is useful for the mental hospital administrator. Fortunately review articles and reports of conferences and workshops on behavior modification are increasing. The Veterans Administration has shown interest and has surveyed its token economy programs.

To the uninitiated, behavior modification sounds complicated and dangerous. In this age of consumer rebellion, mental hospitals, facing difficult tasks with lessened financial support and high vulnerability, might do without controversial programs. However, the hospitals need new approaches to improve patient welfare and staff morale, and perhaps they can be forgiven for jumping on bandwagons. The behavior modification bandwagon seems more substantial than most, as it is braced by concepts from research in the psychology of learning. It also allows the hospital to put to use the psychologist's know-how in defining, recording, and measuring behaviors.

Definitions of behavior modification are numerous. Most simply, it is a reinforcing of appropriate behavior. It is also described as the systematic application of learning principles to maladjusted behavior. Ideally behavior modification leads to continuous interaction of patients and personnel, with instantaneous systematic feedback.

A behavior therapy program is established on the assumption that there is a relationship between the way mentally ill behave and their actual illness. From the standpoint of research, that connection is not impressive, because showing how patients with a mental illness behave does not provide evidence of the origins of the illness. Staff should be wary, because behavior modification principles imply acceptance of a nonorganic theory of mental illness—that is, the environmentalist's view that illness consists of learned or adventitious phenomena. They need to be reminded that mental illness may be a combination of an illness per se and acquired habits. The point here is 'that staff should keep behavior modification from becoming so much of a fad that other therapies are neglected.

In a new program, staff first proceed on the assumption that since behavior is learned, and thus can be

unlearned and new behavior relearned, behavior modification is a matter of arranging rewards and punishments. But as behavior modification is used more extensively in a hospital, their attitudes toward patients and mental illness change. Staff realize that behavior modification has been going on all the time, and that everyone has been receiving and responding to reinforcers. It also becomes clearer that psychotic behavior has at times inadvertently been reinforced by staff and other patients.

Those realizations lead staff to reconsider the assumptions on which the somewhat simple mechanical program, perhaps a token economy, was based, and to change it. For instance, the patients may be given an increased number of responsibilities.

Behavior modification was introduced at Norwich Hospital in December 1969. We started with a community re-entry program, gathering long-term patients from throughout the hospital and putting them on two wards. Here we used the Medfield State Hospital system of six levels of rewards in the form of better living conditions, more privileges, and more responsibility. The program was assigned its own building, and the patients were placed in jobs within the hospital. Staff soon became accustomed to gearing the rewards to the patients' ward and work behavior. Patients progressed, if they were able, to community-based jobs, and eventually a discharge.

In January 1970, the hospital began a behaviorally oriented drug dependence program. It consists of a 20-bed detoxification ward and a 40-bed rehabilitation ward that is called Valiance House (an acronym for Voluntary Addicts Living in a New Creative Environment).

Valiance House is based on 12 levels of rewards contingent on behavior. It is more structured than the other behavior modification programs because more behaviors are identified. Although designed and implemented by two psychologists, the program is largely run by the residents, using community meetings, with the staff acting only as consultants.

In July 1970, another community re-entry program for long-term patients was established on four wards, this time in the form of token economies. Patients who complete this program move either into the multilevel step-type program, termed the advanced re-entry program, or directly into the community. A fascinating phenomenon was the change of the token economy wards toward the orientation of the step-type behavior modification wards; after a year and a half, the token wards had "residents" (instead of "patients") who took much of the responsibility for ward operation, with staff acting as consultants. By May 1972 the token economy program occupied seven wards.

Common Criticisms

Hospitals that operate behavior modification programs must expect to receive criticism from various sources, including staff members, relatives, and the public. If the criticisms are valid, steps must be taken to correct the conditions; if not, the hospital must try to explain the program and the benefits that accrue. At least six kinds of criticism can be expected.

• *The program causes too much regimentation.* The patient on a behavior modification ward may be portrayed as a helpless victim. Such criticism is strong stuff, demanding effective countermeasures. The critics must be encouraged to visit the wards, where they can be shown that the goals are posted and that patients ad-

vance from one level or privilege to another. The behaviors to be rewarded or penalized are made explicit, which should reassure critics that patients are aware of the goals and can work to achieve them. The more severe critics can attend patient-staff meetings and hear the discussion of what values or rewards are assigned to the various behaviors.

• *Behavior therapy is punishment.* The accusation that patients may be punished under the guise of scientific treatment is serious, but it has not been made often. In our experience, staff have been more sensitive than families or patients about depriving patients of comforts that they then must earn, and complaints have been few. When such complaints occur, staff can usually explain the program's rationale, and make it clear that patients earn the more basic comforts quickly. The hospital can avert such criticism by avoiding what appear to be drastic forms of deprivation. In our programs a patient never has to earn a meal, but he may have to earn anything beyond a limited selection of food. A patient is never deprived of a mattress, but on some wards he initially may be given a mattress on the floor; he must earn a bed, and can then progress to a semiprivate or private room. Restraint and seclusion are monitored with special care to make sure they are never used as negative reinforcers.

• *Psychologists instead of physicians write the orders.* In new programs there is danger that nonmedical staff may overly influence the writing of doctors' orders, especially those for privileges. During the first months, periodic meetings are needed to ensure that medical matters are covered by doctors' orders and behavioral aspects by psychologists' instructions. We placed all behavior modification wards under a special unit headed by a psychiatrist to make sure that medical matters remained in medical hands.

• *Other kinds of treatment are neglected.* As behavior modification becomes more accepted, there is danger that other approaches will be neglected. Because using behavior therapy means tackling symptoms directly, staff may bypass psychodynamic issues. The hospital administration must make it clear that behavior therapy is an addition to the therapeutic armamentarium rather than a replacement for other modalities. Each patient is entitled to the most complete treatment plan that is feasible, including the opportunity to learn new behaviors.

• *Behavior modification wards are ghettos.* The most serious criticism is that behavior therapy wards are masked "back wards." As successes are reported, it is important to forestall the dumping of unsuccessfully treated patients from other wards. Careful medically supervised selection of patients is essential, with the same care devoted to it as to, for example, selection of patients for special paid-work projects. Staff must guard against patient exploitation, against retaining patients longer than necessary, and against allowing wards to provide patients with less than their fair share of therapeutic activities. One form of vigilance is emphasis on evaluation. The psychologists in charge should be encouraged to develop evaluation projects, and extra staff should be provided.

• *Behavior modification is unrealistic.* Some psychologists say that behavior modification techniques are artificial devices that keep the patient from full contact with reality, that the use of tokens or rating forms is unlike what happens in the real

world and may encourage patients to adapt to an artificial world. The criticism that behavior modification is unrealistic may be borne out by the way the terms describing our program changed—from "token economy ward" to "simulated group living" or "dress rehearsal for life." On the other hand, it may be argued that role-taking actually is part of everyday life, and that in behavior modification it is made more realistic by such feedback mechanisms as a patient's rating sheets or token records, which show quickly and accurately the relation of his behavior to the environment. Obviously the behaviors developed through reinforcement techniques should be those that will be maintained naturally by the posttraining environment.

Results of the three programs at Norwich cannot be fully reported yet, but we can give some figures. For the step-type re-entry program, a controlled study of the first 6 months showed that 37 percent of the patients were successfully placed in the community, compared with 18 percent of the controls (those who remained on the wards of their geograhic units).

After a year's operation of the token economy re-entry program, of the almost 200 patients who had entered it, 60 percent had been discharged to the community, and about 10 percent had been referred to the advanced re-entry program. Some 30 percent had been returned to the referring wards. During that year only 14 percent of those who were discharged to the community were readmitted to the hospital.

In the drug-dependence program, by May 1972, some 900 addicts had been admitted to the detoxification ward. Of the 224 who were admitted to Valiance House, about three-quarters subsequently dropped out and 19 "graduated"; all 19 remained employed or in training.

Where does this review of assumptions, experiences, and criticism lead us? Behavior modification emphasizes recordkeeping. To modify human behavior, staff must decide what they want to happen, keep track of what does happen, and make sure there is a feedback to the patient. But the primary message seems to be that, although there is nothing completely new about behavior modification, it is a useful way to emphasize that the most important thing that goes on in a mental hospital is human interaction.

Our experiences suggest that behavior therapy programs not only increase interaction but also alter the perception of it by both staff and patients. For instance, when our community re-entry programs for long-term patients were set up, staff believed that the patients were apathetic and lacked drive, and they felt the wards would become more back wards. But to the surprise of many staff, most patients responded with interest and motivation. And in the token economy program, their responsibilities were increased.

We conclude that the use of behavior modification, with appropriate safeguards, is a helpful vehicle for providing improved treatment.

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Personal Causation Training in the Schools

Richard deCharms

On November 9, 1965, an electrical power failure blacked out much of the Northeastern section of the United States. One little boy felt that he had caused the whole trouble. On his way home from school he picked up a stick and hit various objects as he passed by, though his mother had forbidden him to do this. He struck a street light and immediately all the lights went out. Assuming that his misbehavior had caused the power failure, he hurried home to confess to his mother, who reported the "cause" to the police. The boy attributed the cause to himself and felt personally responsible and therefore guilty. The attribution of causation is a concept that may be used to explain the boy's behavior.

Personal causation has been defined as "the initiation by an individual of behavior intended to produce a change in his environment." When a person initiates intentional behavior, he experiences himself as having originated the intention and the behavior. Since he is the originator, we refer to the person as an *Origin*.

When something external to the person impels him to behavior, he experiences himself as the instrument of the outside source, and the outside source is the locus of causality. Since the person is impelled from without, we refer to him as a *Pawn*.

We started our project with the notion that treating people as Origins would help them in conceiving of themselves as causal agents; a reconceptualization of self would result in more competent and satisfying behavior. We did not try to change behavior directly. Rather, we tried to show the teachers by example how to treat others as Origins.

To help a person be an Origin, you must help the person to determine realistic goals for himself; to know his own strengths and weaknesses; to determine concrete action that he can take now that will help him to reach his goals; and to consider how he can tell whether he is approaching his goal, that is, whether his action is having the desired effect.

In spring 1967 we designed a longitudinal study to test the effects of personal causation training on low-income Black elementary school children. Motivation and achievement measures were obtained at the end of each school year for 3 years from fifth to seventh grades. The experimental treatment involved training teachers who then used motivation training exercises in their classrooms. The students who were experimental subjects received training in their classrooms plus the regular curriculum throughout the year from motivation trained teachers. Control subjects had only the regular curriculum from non-motivation trained teachers. The 32 sixth grade teachers were divided equally into experimentals and controls after having been matched on sex and years of teaching experience.

In the schools where the classes remained intact from sixth to seventh grade, teachers were trained who would receive previously trained children, so that the experimental children received 2 years of training and control children received no training by the end of the seventh grade. Approximately one-half of the children in the study (experimentals and controls), attended schools where the children moved from sixth grade to a middle school and did not remain in classroom units. Seventh grade teach-

ers in the middle school all received children from both experimental and control sixth grade classrooms. Random selection of one-half of the teachers to be experimentals resulted in four groups: children who were trained in both sixth and seventh grades, children who were trained in sixth only, children trained in seventh only, and children who received no training.

Personal Causation Training

The experimental manipulation was a two-step process: The teachers first attended a motivation training session; then the teachers and the university staff designed exercises that the teachers used in their classrooms.

Experimental teachers were paid to attend a week-long residential personal causation training course prior to meeting their classes in the fall. The course was designed to encourage self-study and evaluation of personal motives; to acquaint the participants with thoughts and behavior characteristic of people with different motives; to show the value of careful planning and realistic goal setting in relation to any motive; and to promote Origin rather than Pawn behavior.

During the year following their training children, the teachers met with the research staff and helped to design classroom exercises that they then implemented. The exercises were designed to emphasize four major concepts: the self concept, achievement motivation, realistic goal setting, the Origin-Pawn concept. Units designed to present all these concepts were used in the sixth grade training. In the seventh grade training only the self concept and the Origin-Pawn concept were used. Classroom exercises typically lasted for about 8 to 10 weeks and occupied about one-half hour of class time at least 3 to 4 days of the week.

Results of Personal Causation Training

Effect on the teachers—When the children were completing eighth grade, a followup analysis of 20 trained and 20 untrained teachers indicated that a significantly larger number of trained teachers had, subsequent to training, advanced within the school system compared to the untrained teachers. Advancement in the system constituted being chosen for special training at a reading clinic, becoming a curriculum supervisor, or becoming a principal.

Classroom behavior of trained teachers—A measure of the students' perception of the Origin climate of their classroom as set by the teacher was developed. The Origin Climate Questionnaire consisted of 24 questions which asked the students whether the teacher encouraged goal setting by the students, allowed them to determine their own instrumental activity in pursuing their goals, stressed realistic perception of goal setting, allowed the students to take personal responsibility for their actions, and instilled self-confidence in them.

Seventh and eight grade students of experimental and control teachers filled out the questionnaire at the end of a year when the experimental teachers had been trained but their classes had received no formal training. The trained teachers in 10 seventh grade and 13 eighth grade classrooms were perceived by the students as more encouraging of Origin behavior, as defined by the questionnaire, than were a similar number of control teachers in each grade. Thus, the students did see and report significant differences between the classroom behavior of the trained teachers and that of untrained teachers.

Origin behavior of the children—The Origin-Pawn variable was meas-

ured through content analysis of thought samples. The children's stories were coded for presence or absence of six Origin-Pawn categories: internal goal setting, internal determination of instrumental activity, reality perception, personal responsibility, self-confidence, and internal control. Each story received one point for each category and since the children wrote six stories, the Origin-Pawn score could range from 0 to 36.

The Origin-Pawn coding system was applied to stories written by the children at the end of their fifth, sixth, and seventh grades. The fifth grade data constitutes the pretraining measure, sixth and seventh grade data are postmeasures for both experimental and controls for both years.

There is clear evidence that the personal causation training affected the way children write imaginative stories. After training, the characters in the stories more often set their own goals, determine their own instrumental activity, are more realistic, take more personal responsibility for their action, and are more self-confident, i.e., all subcategories of the Origin-Pawn score increase.

Other types of Origin behavior were also affected by the training. In a sixth grade spelling game designed to foster realistic goal-setting the children became progressively more moderate in their risk taking. When coupled with the reality perception category in content analysis of the stories, this may be called increased realistic goal setting.

All of the data give evidence that personal causation training does increase Origin related behavior in children.

Effects of training on academic achievement and school behavior—Here the results become more complex. None of the training was directed toward academic skills, but the results, in general, showed that personal causation training does affect scores on standardized academic achievement measures.

In the school district where this research was performed, the Iowa Test of Basic Skills is administered at the end of each school year. By fifth grade the children are typically more than one-half year behind national norms in grade placement. As the years pass and the children go on to higher grades they fall farther behind. This trend was somewhat alleviated by the personal causation training.

Other types of school behavior on which we had reliable data were records of absence and tardiness. In all four semesters of the research the trained students averaged fewer absences than the untrained students. Of trained students, 31 percent decreased their number of days tardy and 19 percent increased from fifth to sixth grade when training was introduced in sixth grade. Of untrained students, 25 percent decreased their number of tardies and 39 percent increased.

The Origin Concept as a Mediating Variable

Three steps must be demonstrated to establish the Origin concept as a mediating variable: that without any special training the motivation variable is related to academic achievement; that personal causation training changed the motivation variable; and that these changes in the motivation variable induced by the training are themselves related to changes in academic achievement.

Origin climate and academic achievement—In 23 classrooms of untrained teachers there was a significant positive relationship between the Origin Climate as perceived by the students and the average learning rate

of students in the classroom. Put another way, there is a relationship between how much a teacher is perceived by the students as encouraging Origin behavior and how much learning occurs in her classroom.

Evidence for the second step has already been presented—personal causation training increased the Origin Climate of the trained teachers' classrooms.

In the final step in this argument it can be said that personal causation training affected the Origin Climate of the classrooms and that Origin Climate is related to academic achievement. This is fairly strong evidence that Origin Climate as perceived by the students acted as one mediating variable between the personal causation training and increased academic achievement.

Individual Origin score and academic achievement—At the level of individual student achievement the data tell both about the relationship between the Origin-Pawn score and academic achievement in untrained students and about relationships between change on the Origin scale in experimental students and their academic achievement.

When IQ is held constant in the statistical analysis the untrained subjects in both seventh and eighth grades demonstrated that without training naturally high Origin subjects scored significantly higher on the Iowa Test of Basic Skills than did naturally low Origin subjects. A further confirmation of this finding occurred in the fifth grade where the composite academic achievement scores were also significantly related to the Origin score.

Step two of the demonstration has already been reported—training had large and significant effects on the Origin scale.

To take step three we divided the experimental subjects into three groups: Natural Highs, Changers, and Resisters. The mean discrepancy from grade placement for trained students shows that the Natural highs scored highest, the Resisters lowest, and the Changers in between. This finding is in the predicted direction for both sixth and seventh grades but significant only for the sixth grade training.

These data seem to establish the Origin variable, both as captured in the Origin Climate Questionnaire and in the individual's Origin-Pawn score, as a mediator between the personal causation training and increased academic achievement.

In conclusion, it appears that personal causation training had positive effects on the motivated behavior of both teachers and children in the schools. Further, at least some of the increase in academic achievement of the students was directly related to change on the Origin variable induced by the training. Practical effects were achieved and they seem to be related to the theoretical analysis of the Origin concept.

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Contingent Negative Variation as an Indicator of Sexual Object Preference

Ronald M. Costell, Donald T. Lunde, Bert S. Kopell, and William K. Wittner

Research on normal and deviant human sexuality has been hampered by lack of objective and reliable methods for assessing sexual object preferences. While measures of penile volume changes have demonstrated their value in studies of the male, and studies of vaginal blood flow appear promising in the female, there is no technique applicable to both sexes and adequately sensitive to discriminate between stimuli representing preferred and nonpreferred sexual objects. Further, the intrusive, time-consuming, and cumbersome aspects of current methods have posed obstacles to their acceptance and broader application. We report the application of a well-studied electrocortical measure, the contingent negative variation (CNV), as an indicator of sexual object preference in putatively normal males and females.

The contingent negative variation utilized here—sometimes referred to as the "expectancy wave" or "E-wave"—has been the subject of extensive neuro-psychophysiological study. The CNV shows itself as a relatively slow surface-negative shift in the baseline of the scalp-recorded electroencephalogram (EEG), which is revealed by computer averaging of epochs of EEG defined by repetitive stimuli. The CNV occurs in the period between the presentation of a conditional or "warning" stimulus (S1) and a succeeding unconditional or "imperative" stimulus (S2). The CNV seems to reflect anticipation, expectancy, or preparation for the contingent stimulus, in that its appearance and amplitude are enhanced in situations which promote the interest and attention of the subject with regard to S2. CNV is facilitated by requiring some response to S2, but such response is not a necessary condition, since stimulus qualities of S2 may function efficiently to command the subject's interest and attention. Conversely, conditions which promote distraction and inattention inhibit CNV.

We reasoned that a subject would view a preferred sexual stimulus with a heightened state of anticipation or expectancy, which would express itself in relative CNV enhancement, when such opportunities were contrasted with those to view nonpreferred or nonsexual stimuli. To avoid the need for subjects to learn or be conditioned to an extraneous and potentially confounding set of S1 stimuli, a brief initial presentation of the visual stimulus served the function of the S1 "warning" stimulus for each trial. Consequently, each trial consisted of two presentations of a colored slide. The first presentation, serving as S1, lasted 500 msec. The second presentation, serving as S2, appeared after a delay of 1500 milliseconds and remained on for 2000 milliseconds. The experiment consisted of 150 trials, 50 trials drawn from each of three categories of stimuli: female nudes, male nudes, and sexually "neutral" figures.

The photographic subjects were males and females of college age. All photos were taken in a horizontal format and were of full ventral or slightly oblique views of each photographic subject. No attempt was made to obscure or exaggerate the secondary sex characteristics or genitals of the nude subjects. The 10 slides within

each nude category represented five poses, two by each of five subjects. The category of sexually "neutral" stimuli was posed by a single backlighted female, groomed and clothed in a sexually ambiguous manner. Her five poses were matched to those of the nude photographic subjects.

Twelve male and 12 female subjects were recruited for a "psychophysiological experiment" through a campus newspaper. Subjects were single, ranged from 18 to 22 years old, and were not screened for sexual object preference or sexual experience.

Subjects were seated in an electrically shielded, sound-attenuated chamber where they were instructed to fixate on a target in the middle of a back-projection screen within a view box. They were told that they would be presented two exposures of either female or male nudes, or human silhouettes.

Following the 150 trials, 10 nude slides and one "neutral" slide were presented, and the subject rated each photograph on a semantic differential questionnaire.

The effect on CNV amplitude of the sex category of stimulus proved to be highly significant. Males and females both responded with greater CNV amplitude to stimuli of opposite sex than to either same sex or "neutral" stimuli. Only female subjects demonstrated a significantly greater response to same sex than to "neutral" stimuli. When the pattern of amplitude scores of the 24 individual subjects was examined, 18 of the 24 were found to exhibit greater CNV response to opposite than to same sex stimuli. This level of discrimination was true for the first and second 25 trials of exposure to the stimulus classes. A somewhat higher proportion of male subjects responded in the predicted direction. These data are impressive in view of the fact that possibly deviant subjects were not screened out.

A significant interaction was observed between subject sex and stimulus trials. Female subjects exhibited overall higher CNV amplitudes in responses to the first 25 trials of the stimulus classes. Male subjects considerably increased their CNV amplitude response to the "neutral" category from the first to second 25 trials of exposure, while female subjects exhibited the opposite pattern. The pattern suggests that as the experiment progressed both male and female subjects came to perceive the "neutral" slide as female. This interpretation is supported by data from the questionnaires in which only four of the 24 subjects responded to the "neutral" stimulus as "masculine" on the "masculine-feminine" dimension.

Whether the amplitude differences are to be interpreted as CNV enhancement with opportunities to view preferred object stimuli, or CNV inhibition in conjunction with nonpreferred object stimuli, cannot be answered. However, the response pattern with the "neutral" category lends support to an interpretation of CNV enhancement.

These findings support the potential utility of the method as a tool for objectively determining sexual interest and object preference patterns in males and females. Application of the method to subjects with deviant sexual preferences should more clearly establish its reliability and validity.

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Carbon Disulphide as a Cause of Suicide—Epidemiological Study of Viscose Rayon Workers

Thomas F. Mancuso and Ben Z. Locke

The European scientific literature has cited hundreds of case reports of carbon disulphide poisoning among rubber and viscose rayon workers, documenting a wide range of psychiatric symptoms and findings of depression, acute mania, attempts of suicide and homicide, and insanity with commitments to mental institutions, as well as neurological syndromes.

In 1938 a classic study of 120 viscose rayon workers employed in the State of Pennsylvania provided a systematic medical evaluation and findings by a group of specialists. Since 1938 most of the scientific literature relative to carbon disulphide poisoning has come from European reports and the need to reevaluate the status of what has occurred and may be occurring in the United States among viscose rayon and rubber workers has long been evident.

Among industrial employees in general, exposure risk to carbon disulphide has risen with its increased production in the United States from 386 million pounds in 1947 to 798 million pounds in 1969.

It is recognized that in the work environment of the viscose rayon plants there were variations in the levels of carbon disulphide which were directly related to a number of factors: production schedules, availability of labor, presence or absence of regulations, compensation and labor management considerations, company policies, interest in health and safety, availability of technical personnel, frequency and location of air sampling, accuracy of the procedures, and finally, changes in the manufacturing processes and the installation of control measures in different points in time. Despite these general problems, scientific literature provides data on the relationship of occupational exposure to carbon disulphide with mental illness.

An Epidemiological Approach

This investigation represents the first longitudinal epidemiological study of rayon workers in the United States. The purpose of our study was to determine among a cohort of viscose rayon workers exposed to carbon disulphide, the changes in behavioral patterns and the social consequences thereof, as well as the long-term biological effects, in view of the mental, neurological, and cardiovascular observations reported. An underlying objective was to demonstrate the value of studying industrial chemicals as etiological factors in mental illness and to evolve the methodology to study such relationships.

In this presentation we are providing an overview of the mortality due to a specific cause of death: suicide. In our study group many deaths remarkably similar in circumstances to suicides are recorded as accidents. In addition, since it is acknowledged that a great many more individuals threaten suicide than actually commit suicide, our findings on suicides as a cause of death constitute an underestimate of the magnitude of the suicide risk which has occurred among employees of the viscose rayon plant.

Method—This study established the series of cohorts derived from the personnel records from a single viscose rayon plant in 1949, of all new em-

ployees for each year from 1938 through 1948 in which all essential characteristics were available: name, Social Security number, birth date, sex, chronological assignment by department, occupation, dates of employment and job changes, height, weight, marital status, and reasons for termination.

The cohorts were processed by Social Security number through the Social Security Administration (SSA). Following policies established to safeguard confidentiality, the SSA provided identifying data for the members of the 1938–48 population who died with a claim for survivors insurance benefits by December 31, 1968. Using the SSA source data as the basis of queries to vital statistics offices of the States in which the death claims were filed, the death certificates were obtained. These furnished information on the characteristics of the deceased and the causes of death.

For purposes of analysis, person-years of observation were computed by sex and age for the period 1938 to 1968. Mortality rates were calculated by using the number of deaths at age of death as the numerator and the number of person-years of observation for that age group as the denominator. We used the "first job," the first department, and occupation as the means of characterizing the cohort. There were frequent job changes. However, it was noted that invariably the job changes were within the same department, so that there was a common degree of risk together with the fluctuations of risk exposure associated with each occupation in that respective department.

Reconstructing what occurred at this plant, we know it was a newly constructed plant with advantages of the technology at that time, and began operations in 1938. There were occupational areas in which higher exposures did occur. Further, expansions and changes in the manufacturing processes accounted for a higher number of employees in certain departments, a considerably greater volume of carbon disulphide, and, finally, improvements in control measures. The plant operated on a three-shift basis, 7 days a week, with a number of employees working beyond the usual 8-hour day.

Findings—Our findings begin with the total cohort of all those who entered employment in the viscose rayon company as new employees during the period 1938–48. This cohort is then subdivided into two time periods, 1938–44 and 1945–48, representing pre- and postwar years and coinciding with a change in manufacturing process. Each subcohort is then divided by departments and, finally, by selected occupations within these departments.

With all of these subdivisions we have the basic problem of small numbers which makes statistical evaluations difficult. Nevertheless, a consistent pattern does emerge of significant increase in suicides among the rayon workers compared to U.S. rates (1955) for ages 25–64.

The death rates for "all causes" and and "specified causes" are lower in the rayon company, except for suicide. The age-adjusted rate from suicides for male rayon workers is 33.9 per 100,000 as compared to 23.4 per 100,000 for total U.S. males (ages 25–64). The age-adjusted rate for female rayon workers is 11.9 per 100,000 which is also higher than the corresponding U.S. rate of 7.1 per 100,000. The combined sex-age adjusted rate for suicides among rayon workers is 22.7 as compared to 15.1 for the total U.S. population (ages 25–64), a difference which is significant at the

5 percent level. For males and females combined, the expected number of suicides, 30, is 15 less than the observed 45.

For the entire cohort 1938–48, in each of the specific age groups, the rayon company suicide rate is higher than the U.S. rate, particularly in the 35–64 age group. When one applies the U.S. rate to an age-specific group in the rayon population person-years, then the expected number of suicides is 26 compared to the observed 38.

For both time periods, 1938–44 and 1945–48, the rayon company suicide death rate is greater than that of the United States for ages 25–64, but more so in the first time period which relates to the starting operations of the company.

The suicide rate 1938–48 for females in the rayon company is greater than the U.S. rate for ages 25–64; suicide rates for rayon company females were highest in ages 45–64. If one applies age-specific suicide rates in the 25–64 age group for U.S. females to the rayon population in person-years, we get an expected number of four suicides compared to our observed seven.

Subdividing each of the two cohort time periods by department for ages 25–64, we find that Departments 1, 2, and 12 are higher than the remaining departments of the company and the U.S. rates.

In Departments 1 and 12 the rates are much higher than in the remaining departments, and thus is responsible for the higher rate in this subcohort, 1938–44. In the 1945–48 cohort the higher rate occurs in Department 2 in contrast to the remaining departments and the United States.

Comparable data for the females emerge for Department 9. This department employed a greater number of females than all other departments combined and predominately in the younger age groups. For the combined cohort 1938–48 the female suicide rate was higher in Department 9 than in other departments or the U.S. rate. In the two subcohorts, Department 9 was higher in the second time period, 1945–48.

A breakdown by occupation within each of the departments further illustrated how patterns of suicide among occupational groups contributed to higher risk in specific departments.

Of critical importance in epidemiologic investigations of long term delayed biological effects is the minimum quantity of exposure and the latency period. Among the 46 suicides 40 remained employed in the same department, and six changed to other departments. Of the 22 male suicides among the cohort employed during 1938–44 who worked in Departments 1, 2, and 12, the median latency period was 10½ years. The first suicide occurred within the first year of employment and the last about 27 years later. The median number of years these suicide cases had worked in these departments was nearly 2¾ years, with a maximum of 8½ years. The age at employment for these suicides was 36.5 years, considerably older than the 26.7 years of age for that entire cohort. The median age at death for these 22 suicides was 49 years.

When we looked at those employed to work in Department 2 during the second time period (1945–48), the median age at employment for the eleven suicides from this cohort was 28 years. The median age at time of suicide was 40 years. For this group the median latency period was 13½ years. The earliest suicide occurred 6½ years after employment and the last one after 21½ years. From available data, this group had a median

exposure of less than one-half year and a maximum of 4 years.

Effects of Carbon Disulphide

There is ample evidence that employment in the viscose rayon industry results in exposure to carbon disulphide, a principal poison in the manufacturing process, and that such exposure in both the viscose rayon and rubber industries has directly induced mental illness among the employees exposed. Also, the literature is replete with reports of suicidal and homicidal tendencies among workers exposed to carbon disulphide. The basis has been medically established that certain physiological and biochemical changes are initiated by carbon disulphide, and there are many case reports of directly induced, readily apparent psychosis among those employed and exposed in the same occupations and work areas.

Latent effects—The evidence suggests that among other workers the emotional-mental balance has been altered by carbon disulphide exposure, but does not manifest itself sufficiently to require or seek medical attention until some additional exposure, or factor, aggravates the preexisting physiological imbalance and precipitates overt responses such as deviations in social behavior, mental illness, or suicide.

The varied symptoms that are caused by carbon disulphide may act accumulatively, and in combination, to accentuate the severe depression experienced by these workers. Such toxic effects result in changes in personality, memory defects, extreme irritability, uncontrollable anger, hallucinations, delusions, confusion, severe insomnia, sexual impotence, marked depression, and muscular weakness.

The psychological syndrome of carbon disulphide exposure is not limited to subjective experiences. Recent advances in biochemistry lead us to postulate that in addition to the acute and subacute toxic effects of carbon disulphide, biochemical and pathological changes initiated by carbon disulphide during occupational exposure may persist over a long span of time. Delayed biological effects of abnormal mental and social behavior may occur in subsequent years in response to further environment and social stresses.

In view of the extensive use of carbon disulphide in various industries, occupations, and products, and its potential to induce mental illness and changes in social behavior, a national study to determine the nature and extent of the populations at risk is warranted. It is, moreover, particularly important that simultaneous research be undertaken to specifically identify the biochemical precursors to mental illness which would be possible among employees exposed to carbon disulphide in the controlled industrial environment.

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Psychological Reactions of Emergency Room Staff to Suicide Attempters

Thomas C. Welu

Successful suicide prevention efforts depend on identifying and treating individuals who have a higher probability of completing suicide than the general population. One high-risk group easily identified and accessible is the suicide attempt population whose first stop after an attempt is the emergency room of a hospital.

Despite the emphasis on the need for, and the positive effect of psychological support, there has been little effort to determine if such support is given to suicide attempters once they reach the emergency room.

The following observations were the result of 8 months spent in an emergency room of a large teaching hospital when I was continuously on call and saw almost every attempted suicide.

Medical Staff's Reaction

First a definition of a response as positive, indifferent, or negative is required. A positive response is one which contributes to a therapeutic atmosphere and exhibits concern for and acceptance of the patient. An indifferent response is characterized by an unconcerned, technician-like performance or attitude. A negative reponse, expressed as anger, hostility, disgust, rejection, contempt, and counteraggression, contributes to further alienation and feelings of aloneness.

When a suicide attempter arrives in the emergency room, the initial concern of the intern or resident is centered around the medical problem. If the problem is acute, this reaction is more likely to be positive or indifferent rather than negative. The staff also reacts positively when treating a suicide attempter who is suffering from a terminal or chronic physical disease. Perhaps this occurs because the physician can identify with, or at least understand, the patient's ambivalence toward life.

When no longer occupied with the acute crisis, the physician's reaction and attitude often become negative and are expressed by hostile remarks. The following reactions and remarks were frequently heard and observed in the emergency room when the medical staff was presented with a "typical overdose or wrist-slasher."

> Patients bring this on themselves; they are frustrating to work with and there is nothing organic to treat after immediate medical care is given.

> I gave the patient medication which will give her diarrhea and teach her a lesson.

> Patient wil be lavaged using an Ewald tube for prophylactic reasons and this will teach her a lesson so she won't do this again.

After treating a patient for a self-inflicted wrist laceration the physician remarked,

> Why didn't he do a good job to begin with and not just fool around.

Sometimes even the medically serious suicide attempt was the focal point of similar reactions: A patient arrived with a self-inflicted gunshot wound and as he was going to the operating room the resident remarked,

> If the guy wanted to kill himself why didn't he put the gun in the right place.

Of the total number of suicide-attempt patients treated during the 8-month observation period, only 10 percent received a positive response. The remaining 90 percent received a response ranging from 60 percent treated with indifferent neutrality, to 30 percent reacted to with outspoken hostility.

Nursing Staff's Reaction

The nursing staff's reaction differed both in intensity and in type. Nurses were less verbally negative except when the patient was very uncooperative. In these cases, the patient was the object of angry remarks, usually made in a raised tone of voice.

Some of the physician's typical negative statements were made by the nursing staff, but these were infrequent and usually not communicated to the patient. The nurse seems to react more with anxiety and ambivalence than with hostility and counteraggression.

Besides observing the nursing staff I was able to examine Nursing Care Plans of those suicide attempters placed in observation. On such plans the nurse lists the patient's strengths and weaknesses along with nursing care goals and directives. A total of 76 nursing care plans were examined, which included 38 suicide attempts and 38 other admissions for observation.

Providing "emotional support" was listed as a nursing goal for 24 of 38 suicide attempters and 14 of 38 comparison patients. This can be considered a positive response and indicates that nursing staff are at least making an effort to keep themselves aware that the suicide attempter is in need of emotional support.

Concern about the patient's physical needs was emphasized for 17 of 38 suicide attempters and 26 of 38 comparison patients. This could indicate that the medical crisis was over and the patient needed only to be observed, or it could be the result of a withdrawal from the suicide attempter by the nursing staff because of anxiety, fear, or anger.

The nursing staff was concerned about protecting the patient from self-harm in one-third of the suicide-attempt patients. Perhaps these patients were still suicidal, or perhaps this reaction was another indicator of the staff's anxiety and fear when exposed to a suicide attempter.

I estimated that of the total number of suicide-attempt patients treated during the 8-month observation period, 50 percent received a positive reponse from the nursing staff; this was especially true of those in observation. Only 5 percent were reacted to with outspoken hostility, and the remaining 45 percent received an indifferent response characterized by ambivalence and anxiety. Despite the nurses' positive responses, these estimates depict an atmosphere that is not synonymous with adequate psychological support and could be considered in many cases to be antitherapeutic.

Etiological Considerations

The etiologies of the emergency room staff's conscious and/or unconscious negative and indifferent reactions to the suicide attempter are as complex as the phenomenon being reacted to.

The following considerations explore the rationale for such behavior. Some apply more to the medical staff than to the nursing staff and some are common to both. None are mutually exclusive and each influences the others.

- Suicide is still a taboo subject despite efforts by suicidologists to separate facts from fables with regard to this phenomenon. There is little evidence to show that emergency room staffs react toward suicide differently from the rest of society.
- Suicide attempters not presenting a serious medical problem are viewed as wasting the staff's time, especially if other patients who are seen as legitimately sick have to kept waiting.
- Suicide attempters are viewed as causing their own medical problems

and deserving of little sympathy. Other patients are seen as being sick due to circumstances beyond their control and are more deserving of emotional support and concern. The idea of fault or responsibility outweighs consideration for possible emotional difficulties.

- Modern medicine relies heavily on medication in effecting a cure. For a person who attempts suicide by overdosing, medication becomes a tool for self-destruction, which is opposed to the effect intended by the physician. This reversal of use sets the stage for possible retaliation by the physician for the ingratitude and irresponsibility shown by the suicide attempter.
- The staff of an emergency room has saved many lives, and it is natural that they regard life in a respectful and almost sacred manner. When a suicide attempter is brought to the emergency room, the self-destructive behavior communicates to the staff that the very thing they are dedicated to is treated with reckless abandon. Again we see the framework for a conscious and/or unconscious negative or indifferent response by the staff.
- A physician spends the greater part of his academic career understanding man as a biological and physiological being. As a result the physician has limited knowledge to draw from when he is presented with a phenomenon having psycho-social-biological components.
- Individuals on the emergency room staff when treating a suicide attempter will display such reactions as anger, hostility, fear, compassion, disgust, anxiety, rejection, ambivalence, frustration, contempt, and concern. The type of psychological response will depend on the individual's personality, the immediate circumstances, and the degree to which he or she has been influenced by the previously stated contributing factors.

Recommendations

These recommendations are made to help promote a positive response to the suicide attempter by the emergency room staff, a response based on knowledge and insight rather than on myths and inappropriate expressions of emotion.

- The emergency room staff should become the focal point of an intensive education process which would emphasize the knowledge accumulated from research and clinical experiences concerning suicide.
- The emergency room staff should be required to indicate on the medical charts of suicide attempters a short description of what psychological support was given. These notations would be checked periodically by a member of the hospital staff.
- The emergency room staff should be considered as professionals who could be active in crisis intervention, especially since they are the persons whom the suicide attempter first, and sometimes last, comes in contact with. Up to this point, the staff has been largely ignored as possible therapists.
- Medical and nursing schools must place more emphasis on the psychosocial components of man in their educational curriculum. There has been some effort along these lines, but its impact seems to be almost negligible especially among physicians.

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mental health and the law

New Child Custody Laws: Making Them Do What They Say

Elissa P. Benedek and Richard S. Benedek

On April 1, 1971, the Child Custody Act of 1970, became effective in Michigan. As the act reflects thinking that is prevalent among professionals, we can expect to see it emulated. Thus, while this discussion was inspired by the Michigan law, it explores the relationship of laws, courts, and behavioral scientists to the resolution of custody disputes.

From Legislature to Courthouse

The interests of the child in custody disputes were recognized in Michigan for the first time in the Child Custody Act of 1970. To appreciate how far the law has come, it should be realized that in feudal times when marriages collapsed, children went to the fathers because they were his personal property. More recently, custody has almost invariably been awarded to the mother on the assumption that she is indispensable to child rearing.

Recently the idea emerged that the overriding consideration of the child's best interests cannot be expressed in terms of rigid rules. The Family Law Section of the American Bar Association in 1963 approved a model law that stated that "custody shall be awarded . . . according to the best interests of the child." The difficulty is to retain flexibility and, at the same time, provide meaningful standards.

Michigan has done a creditable job of achieving this objective. The law states that in a custody dispute "the best interests of the child shall control." The keystone of the act is the combination of this declaration with a definition of "best interests of the child" as the total of 10 factors to be "considered, evaluated, and determined by the court."

The love, affection, and other emotional ties existing between the competing parties and the child.

The capacity and disposition of competing parties to give the child love, affection, and guidance and continuation of the educating and raising of the child in its religion or creed, if any.

The capacity and disposition of competing parties to provide the child with food, clothing, medical care, or other remedial care recognized and permitted under the law of the State in lieu of medical care, and other material needs.

The length of time the child has lived in a stable satisfactory environment and the desirability of maintaining continuity.

The permanence, as a family unit, of the existing or proposed custodial home.

The moral fitness of the competing parties.

The mental and physical health of the competing parties.

The home, school, and community record of the child.

The reasonable preference of the child, if the court deems the child to be of sufficient age to express preference.

Any other factor considered by the court to be relevant to a particular child custody dispute.

A significant aspect of this definition is its blend of legal and social language. Social scientists should have little difficulty accepting or working within the purview of the act. Likewise, the criteria that the courts are directed to consider should be palatable and acceptable to judges.

Given the novel and general phraseology of the Child Custody Act, judicial interpretation may affect its application. Thus, in terms of the meaning of this law and its conse-

quences, consideration must focus on the role of the courts.

As the law is interpreted by the courts, it is important that it remain free of unsound or fallacious doctrine. While appeals may not be numerous, some cases will undoubtedly wind up in the appellate courts. Their decisions may result in reincarnation of outmoded concepts or introduction of undesirable new ones. Every effort should be made to avoid this and, although there is no particular reason to anticipate this occurrence, it must be recognized that ill-conceived case law has evolved in the past.

Until there has been developed a body of case law, and to some extent thereafter, interpretations must also be made by the trial courts. While theirs may not be as far-reaching as appellate decisions, they may be important to the cases in which they are made. For instance, in construing "moral fitness" should traditional concepts of morality necessarily control or should it be assumed that they no longer apply?

Important as the meaning of the law may be, more critical is what the law does, its effects or consequences. If the court is unable to interpret properly, or even recognize, facts pertaining to the elements that constitute "best interests of the child," the act cannot work as it is supposed to and the intended consequences will not ensue. For example, whether a preference expressed by the child is "reasonable" or an attempt to manipulate may assume critical importance. Might the capacity to give "love and affection" manifested by a day spent at the ball park be upstaged by the gift of a trail bike?

The key to effective implementation to the act is the capacity of the court to extract relevant evidence and to translate, categorize, and evaluate this in terms of the 10 designated factors that constitute "best interests."

Comparison with Former Law

An important corollary to the enactment of the act was repeal of the statutory presumption favoring custody to the mother of children under 12 years. The former law, expressing a preference for mothers, was cloudy in respect to the weight the preference should receive. Appellate decisions interpreting it were numerous and not entirely consistent.

Yet, it was generally held to mean that unless there was a compelling reason not to do so, custody should be given to the mother. There was some merit to this construction. First, it did make the courts' decisions easier. And, while best interests of the children may continue to dictate that they be placed with the mother, this was perhaps more true during an era when the mother's only role was the care and feeding of her brood.

In any event, the former law discouraged some fathers to whom custody should have been awarded from seeking it, and prevented others who did, from being successful. Unfortunately, promiscuity of the mother emerged as the classic means for attempting to overcome the presumption. The statutory presumption invited parties to wage custody battles in the gutter. This approach seemed calculated to guarantee a nightmare with damaging ramifications. For instance, the mother who failed to win custody was stigmatized by society as "unfit." While it would be naive to believe that mud slinging is obsolete or to assume that some new charm is soon to characterize all custody disputes, it appears that a more positive approach to the custody question is suggested by the new act.

One Progressive Program

The relative autonomy in each

judicial circuit, coupled with the flexibility of Michigan's friend-of-the-court laws, has made possible the establishment of a program in one county that otherwise could not exist. An investigation and recommendation to the court is made by a friend-of-the-court social worker in every case involving minor children. The recommendation is governed by the best interests of the child. Where the parties agree to custody, inquiry is not as extensive as when custody is disputed. Where it is disputed, a thorough study is made, and psychiatric evaluations of the parties and of the children may be obtained before the recommendation is filed.

If objection is raised, the court may order the friend of the court to conduct a full referee hearing. These hearings are conducted by friend-of-the-court attorneys knowledgeable in family law and who, where possible, have had prior experience and training in the behavioral sciences.

While the hearing is conducted with decorum, it is held in a setting less inhibiting than the courtroom. These hearings tend to be longer than those conducted by the court, suggesting that the atmosphere of the courtroom prompts a "let's get it over with" attitude. Also, participation by extended family is encouraged. A report is filed that enables the parties, as well as the court, to know the referee's recommendations and the basis of his conclusions. A party who is dissatisfied may have the matter heard by the court, but this does not happen often.

Thus, by involving judges, attorneys, and behavioral scientists in the decisionmaking process, a great deal of controversy is resolved outside of the courtroom. While this program is far from perfect, it represents a relevant approach to implementation of rather sophisticated legislation.

Role of the Behavioral Scientist

Fundamental to the effectiveness of the Child Custody Act of 1970 is the ability of the court to evaluate the evidence that comes before it. Unless the court recognizes the relevance of a given piece or pattern of behavior to a particular factor, and can determine whether it is a strength or weakness in respect to the party's relationship with his child, the objectives of the act will be frustrated. Does the "Dapper Dan" reflect his mother's disposition to provide him with clothing, give him love and affection, or satisfy some narcissistic need of her own?

Questions such as these can usually be answered in the context of the particular case, and, ordinarily, after seeing the family or families involved. This is something the behavioral scientist can do. Yet, not infrequently, the behavioral scientist is reluctant to participate in custody disputes. Some take the position that these matters should not be handled in the courts and use this as a justification for not getting involved. But custody is decided in the court and, if the behavioral scientist is to have any impact on the decision, it is in that forum that it must act.

Many admit resistance to having their methods, opinions, and conclusions challenged or disputed. For a discipline steeped in questioning and noting inconsistencies in others, this is somewhat incongruous.

Other behavioral scientists are frightened at the prospect of their recommendations being tantamount to the decision of the court. The behavioral scientist should have sufficient confidence to believe that, if the court were willing to abrogate its responsibility, he would be capable of making a proper disposition.

Many behavioral scientists avoid taking a definite position by noting such an infinite variety of variables that it is not possible to formulate a reasoned opinion, hedging an opinion to such a degree that it offers little upon which one can rely, providing a discourse on irrelevant aspects or proposing an alternative that cannot be pursued.

All this reflects a preoccupation with the behavioral scientist's own best interests instead of with those of the children involved. The behavioral scientist must be willing to commit to the scrutiny of the court his knowledge of development, child rearing, and family living. He should view the possibility of his conclusions being disputed not as an excuse for retreating, but as reason to be thorough and precise. And, he should be willing to put his prediction on the line. Decisions must be made, and the chances of the courts making them wisely will be enhanced if insights from behavioral scientists are available to them.

Once the behavioral scientist has become involved with a case, he may find the opportunity to present a discussion of child custody problems and considerations. Occasions for doing so should be seized upon because they are effective means of enlightening judges, lawyers, and other professionals. Thus, the behavioral scientist will have the ear of a segment of the population that, while highly educated, is relatively naive as to basic concepts of child development. The effects of parental absence at a critical developmental stage, pros and cons of foster care, and the feelings of divorced parents and their children are but a sampling.

It is hoped that knowledge gained through case consultation will be applied to other situations and not limited to custody disputes. Judicial horizons broadened by the inclusion of insights from behavioral scientists are bound to unfold decisions more accurately reflecting the best interests of children.

As noted, constraints may be imposed by the appellate courts. Control over this contingency is so limited as to justify only brief comment. Perhaps the best safeguard against this are well-reasoned trial court opinions and persuasive arguments on appeal. Naturally, the more knowledgeable lawyers and judges are, the better are the prospects for achieving this measure of security. Moreover, recognizing the implications of a precedent-making decision. the behavioral scientist who is invited to assist counsel on appeal should leap at the opportunity.

In summary, the Child Custody Act of 1970 represents a step forward, and we see no reason to anticipate that application of new custody laws will be met with resistance. However, "best interests of the child," even when defined by meaningful standards, remains a sufficiently elusive concept to tax the ability of the courts to decide these cases correctly. This suggests development of innovating programs designed to maximize the chances of all pertinent information being considered and appropriately evaluated, and that behavioral scientists should reexamine their attitudes and make a more relevant contribution toward resolution of custody disputes.

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mental health news digests

Memorandum of Joint US–USSR Meeting on Schizophrenia Research
Moscow, September 14–20, 1972

From September 14 to 20, 1972 meetings were held at the Institute of Psychiatry of the Academy of Medical Sciences of the USSR in Moscow between members of a delegation on schizophrenia research of the US and the USSR. On the American side, participants in the discussion were from the National Institute of Mental Health as follows: Bertram S. Brown. Director; Irwin J. Kopin, Chief, Laboratory of Clinical Science; Morton Kramer, Chief, Biometry Branch; Loren Mosher, Chief, Center for Studies of Schizophrenia; William N. Pollin, Chief, Twin and Sibling Studies Branch; Gian C. Salmoiraghi, Director, Division of Special Mental Health Research; and E. Fuller Torrey, Special Assistant to the Director for International Activities. On the Soviet side, participants were from the Institute of Psychiatry of the Academy of Medical Sciences of the USSR as follows: A. V. Snezhnevsky, Director; R. A. Nadzharov, Deputy Director; M. G. Shchirina, Research Secretary; M. Ye. Vartanian, Chief, Laboratory of General Pathophysiology; M. Sh. Vrono, Chief, 1st Clinical Dept.; K. K. Monakhov, Chief, Laboratory of Neurophysiology; D. D. Orlovskaya, Chief, Laboratory of Experimental Pathology and Brain Pathomorphology; Yu. F. Polyakov, Chief, Laboratory of Pathophysiology; A. B. Smulevitch, Chief, Epidemiological Department.; E. Yu. Sternberg, Chief, 3rd Clinical Department.

During this time Dr. Snezhnevsky and Dr. Brown met in the Ministry of Health with Dr. Boris V. Petrovsky, USSR Minister of Health. In attendance was Dr. Roger O. Egeberg, US Co-Chairman of the US-USSR Joint Committee. Other people present were Dr. E. A. Babajan, Dr. M. N. Saveliev, Dr. M. G. Shchirina, and Dr. E. F. Torrey. The US delegation was also received at the Academy of Medical Sciences of the USSR by Dr. V. D. Timakov, President of the Academy.

In addition to schizophrenia research the two delegations discussed other areas of psychiatric research ranging from basic brain research, to clinical research on human behavior, on syndromes such as depression, and epidemiological aspects of mental disorders. The American delegation also had an opportunity to acquaint themseves with Soviet researchers in Leningrad, Kiev and Tbilisi.

The parties jointly proposed the following:

1. That the report of the meeting be submitted to the US-USSR Joint Committee for Health Cooperation at its next regularly scheduled meeting in Washington in February-March 1973 with the request that schizophrenia research be included as part of the US-USSR Agreement on Health and Medical Science in 1973-74.

Specific, concrete examples of the research which might be undertaken include the following projects:

1) The standardization of clinical differentiation of schizophrenia in its

main forms (Dr. Ruben Nadzharov would be the Project Director for the USSR, Dr. Bertram Brown will designate the Project Director for the USA);

2) Genetic mechanisms in the transmission of schizophrenia (Dr. Marat Vartanian would be the Project Director for the USSR and Dr. Bertram Brown will designate the Project Director for the USA);
3) Biological factors in the pathogenesis of schizophrenia (Dr. Marat Vartanian would be the Project Director for the USSR and Dr. Bertram Brown will designate the Project Director for the USA);
4) Factors influencing the risk of morbidity of schizophrenia (Dr. Erikh Sternberg would be the Project Director for the USSR and Dr. Bertram Brown will designate the Project Director for the USA):
5) Other areas mutually agreed upon by the Co-Chairmen. Cooperative research envisages the following:
   a) exchange of clinical, laboratory and other personnel. The duration of the stay in each country and number of personnel participating in mutual exchange will be designated by the Co-Chairmen Prof. A. V. Snezhnevsky and Dr. B. S. Brown, and submitted to the coming session of the Joint Committee USSR-US on collaboration in Health Services;
   b) exchange of serum, cerebrospinal fluid, and other clinical samples;
   c) exchange of data on research methodology;
   d) exchange of data on experimental design and statistical methods for the analysis of experimental, clinical, and epidemological data;
   e) exchange of data on special population groups;
   f) additional areas of mutual interest agreed upon by both teams.

2. Dr. B. S. Brown and Prof. A. V. Snezhnevsky would be designated as Co-Chairmen for schizophrenia research and would serve as coordinators for all cooperative research projects.

3. A return delegation of USSR scientists interested in schizophrenia research, may if it is considered desirable, visit institutions in the United States, including the National Institute of Mental Health, at an appropriate time.

4. By agreement of both Co-Chairmen, directors of the lead Institutes may designate other laboratories or institutions in their country as a subgroup for collaborative research.

5. Exchange of reprints and information on ongoing schizophrenia research should begin immediately. Consideration should be given to the possibility of a special section in the psychiatric journals of the two cooperating Institutes (*Schizophrenia Bulletin* and the *Korsakoff Journal of Neuropathology and Psychiatry*) describing developments in schizophrenia research in the other country. The Co-Chairmen will determine useful contemporary and classic psychiatric literature to be translated and made available in both countries.

6. Consideration be given to instituting cooperative research on mental health care delivery systems as part of the US-USSR Health Agreement section on provision of health services.

7. The development of such studies and their results should be discussed during regular US-USSR meetings of the coordinators and their designees in each country by turn—US and USSR.

Signed on this 20th day of September, 1972

from the side of the United States	from the side of the Union of Soviet Socialist Republics
Bertram S. Brown, M.D. Director, National Institute of Mental Health	A. V. Snezhnevsky, M.D. Director, Institute of Psychiatry of the Academy of Medical Sciences of the USSR

Adverse Effects Upon Infants of Early Separation from Mothers

What are the specific biological and behavioral impacts of abruptly separating a newborn infant from his mother soon after he has established a close relationship with her? What effect might the separation have on the youngster's physical and social development in later years? Using animal studies as a model for human phenomena, Dr. Myron A. Hofer, of New York City's Montefiore Hospital and Medical Center is exploring these issues.

The research will be conducted with animals during the early period of maternal separation, during the time of adaptation or recovery from the loss, and in adulthood. Through subsequent physiological tests, the investigation will attempt to determine why the matured animals show such a wide range of reactions to similar stressful situations.

The animal model studies may suggest means of reversing or preventing responses to the biological processes responsible for the increased risk of illness known to occur in persons recently displaced from social relationships, important goals, and familiar environments.

Grants for Child Mental Health Services

Awards totalling close to $10 million for staffing children's mental health services have been announced by the National Institute of Mental Health.

The awards launch a special program to stimulate the development of community-based mental health care for children. A total of 60 facilities in 35 States and the District of Columbia received the grants to set up innovative services and collaborative arrangements.

In many of the programs, community mental health centers and other service agencies will join in providing a comprehensive range of treatment and followup services for children. A major goal of the Federal aid is also to help develop preventive programs that will reach out to children and their families in their everyday life settings. The grants bring together national priorities in child mental health and local community needs.

A variety of approaches will be tried out and used as models elsewhere, if successful. Parent-child walk-in centers, prenatal and well-baby clinic programs, parent education, and consultation and collaboration with the courts are among the services being funded. In several communities the local

school system will share in providing the services, concentrating on high-risk and under-served school populations. Other programs will focus on day care and nursery school facilities and staff, attempting to identify problems early and to provide early intervention. These include close cooperation with local Head Start programs.

The grants were awarded under Part F of the Community Mental Health Centers Act, which authorizes Federal support for staffing, construction, training, surveys, or pilot projects for mental health service to children.

The awards are as follows:

Mobile Mental Health Center, Mobile, Alabama, will receive $131,376 for training and supervision of consultants to work through primary caregivers in prevention, early identification, and early intervention.

Ouachita Regional Counseling and Mental Health Center, Hot Springs, Arkansas, will receive $272,002 to provide regularly scheduled clinics in rural areas through the use of a mobile van staffed by an interdisciplinary team.

Central City Community Mental Health Center, Los Angeles, California, will receive $302,720 to provide information, training, and guidance to those directly responsible for children (i.e., parents, school personnel, service agencies, expectant mothers) with a focus on early infant stimulation and affective behavior and early identification of problems.

Peninsula Hospital Community Mental Health Center, Burlingame, California, will receive $102,370 for direct services and outreach to special high risk groups, including establishment of a therapeutic day nursery program for preschoolers.

Northeast Community Mental Health Center, San Francisco, California, will receive $245,580 to provide services for Chinese children and their families aimed at primary prevention through mental health education; immediate treatment of diagnosable mental illness in children; consultation and outreach programs; and training, research, and evaluation.

Westside Community Mental Health Center, San Francisco, California, will receive $198,765 to provide developmental services for children of low-income, working mothers and a comprehensive program of health services for sick and well children of working mothers.

Emmanuel Hospital Community Mental Health Center (Children's Services Unit), Turlock, California, will receive $235,026 to expand services to children with emphasis on prevention, care, and treatment at the community level and strong emphasis on training personnel for new and different functions.

Sacramento County Mental Health Services, Sacramento, California, will receive $154,000 to expand preventive activities, including a Community Aide program utilizing paraprofessionals; training of high school students to work with younger high-risk children; consultation and training of school and juvenile court personnel; and a partial hospitalization facility for adolescents.

Joseph S. Gollob Adams County Mental Health Center, Commerce City, Colorado, will receive $69,965 to provide comprehensive services in a high-risk area with staff serving as child advocates.

Bethesda Community Mental Health Center, Denver, Colorado, will receive $166,106 for services focused on infants of deprived or disturbed parents through use of homemaker-therapists trained in short-term family crisis intervention.

Jefferson County Community Mental Health Center, Lakewood, Colorado, will receive $265,000 for a diagnostic and treatment center within the school system to provide early intervention, coordination, and long-term followup services.

Southern Colorado Comprehensive Mental Health Center, Pueblo, Colorado, will receive $100,499 to provide child mental health services with focus on identification and prevention of problems symptomized by school dropouts and academic deficiencies.

Connecticut Mental Health Center, New Haven, Connecticut, will receive $203,063

for expansion of services in a high-risk, model cities area in cooperation with schools and courts, including a developmental assessment program, speech and hearing testing, parent education and counseling, and a day care program.

Southern New Castle County Community Mental Health Center, New Castle, Delaware, will receive $92,952 to expand preventive mental health services in well-baby clinics, day care centers, and schools.

Area A Community Mental Health Center, Washington, D.C., will receive $132,244 to implement increased collaboration and consultation to educational, judicial, and correctional systems and to medical and recreational facilities.

Palm Beach County Comprehensive Community Mental Health Center, West Palm Beach, Florida, to receive $255,000 for expanded services to children, including a therapeutic nursery school, consultation to local day care centers, group care residential treatment facilities, and outreach satellite programs.

Kalihi-Palama Community Mental Health Center, Honolulu, Hawaii, will receive $325,000 to provide comprehensive services focused on a high-risk model cities neighborhood in cooperation with other public and private agencies.

Mental Health Authority for West Central Illinois, Quincy, Illinois, will receive $299,871 for comprehensive children's services to preschool and school-aged children, especially children excluded from family and school and inaccessible to other preventive measures.

Region 10 Mental Health Foundation (Quinco Children's Mental Health Services Program), Columbus, Indiana, will receive $244,400 to provide consultation and education services to schools, the welfare department, the courts, and police through satellite units in outlying rural communities.

Southern Indiana Mental Health Guidance Center, Jeffersonville, Indiana, will receive $200,970 to provide consultation and education, outpatient, and emergency services for children with emphasis on cooperation with the schools.

Community Mental Health Center of Scott County, Davenport, Iowa, will receive $45,134 to develop a program of diagnostic, psychoeducational, and consultative services for preschool children which will coordinate and complement existing community services, including a preschool assessment program and a partial hospitalization program for high-risk 3 and 4-year-olds.

Prairie View Mental Health Center, Newton, Kansas, will receive $199,479 to expand consultation and education, treatment, and program coordination services for children with emphasis on developing home and foster home alternatives to children's inpatient care.

Pennyroyal Regional Mental Health/Mental Retardation Center, Hopkinsville, Kentucky, will receive $117,576 to expand children's services with special attention to treatment in the schools of high-risk, preschool children with perceptual and learning difficulties.

Cumberland River Regional Mental Health/Mental Retardation Board, Corbin, Kentucky, will receive $250,000 to provide each county in its catchment area with staff to coordinate children's programs, backed up by mobile clinic teams, therapeutic summer camps, group homes, and classes in the school system for disturbed children.

Department of Mental Health, Commonwealth of Massachusetts, Boston, Massachusetts, will receive $308,222 for comprehensive services to children and their families, including strong elementary school and early child care programs, with emphasis on high-risk infants and hard to reach parents.

Human Development Center, Duluth, Minnesota, will receive $129,630 to provide outreach workers to families with preschool children at risk; outreach small group programs in the schools, for disturbed children and their parents; and consultation to teachers.

Eastern Montana Great Plains Mental Health Center Complex, Miles City, Montana, will receive $60,337 to provide services to a sparsely populated, rural area, focusing on learning disabilities within the schools and on provision of services to juvenile courts, including the Indian Reservation Court System.

Panhandle Mental Health Center, Scottsbluff, Nebraska, will receive $95,040 for

expansion of consultation and education services to parents and other agencies; and outpatient services through outreach teams, particularly to minority group children in outlying rural areas.

Dartmouth-Hitchcock Mental Health Center, Hanover, New Hampshire, will receive $72,369 to provide outreach, emergency, and consultation and evaluation services for children, featuring a storefront center, utilizing paraprofessionals for outreach into homes and schools.

Bernalillo Community Mental Health-Mental Retardation Center, Albuquerque, New Mexico, will receive $188,549 for programs with an outreach-child development focus utilizing special "child development" teams to supplement and cooperate with regular neighborhood teams.

The 19th Ward, Rochester, New York, will receive $97,917 to extend mental health services through a cooperative program with other health agencies, featuring drop-in centers and peer counselors for children ages 10 through 19.

Maimonides Medical Center, Brooklyn, New York, will receive $458,388 for prevention and treatment services focusing on children ages 5 and under, including a postnatal program with walk-in clinics and a preschool program.

Raleigh Public Schools, Raleigh, North Carolina, will receive $107,398 for a program of high-level cooperation and collaboration between the school system, the mental health center, and the State hospital, with emphasis on preschool age children and first graders.

Orange-Person-Chatham Mental Health Center, Chapel Hill, North Carolina, will receive $165,083 to provide consultation to existing day care centers and to encourage the development of new centers.

Memorial Mental Health and Retardation Center, Mandan, North Dakota, will receive $179,731 for expansion of services to meet the needs of outlying rural areas, focusing on consultation to schools and organization and utilization of existing resources.

Good Samaritan Mental Health Center, Dayton, Ohio, will receive $187,220 for development of a school-based, family-centered, child-oriented counsultation and support program in selected schools in high-risk areas aimed at children in kindergarten and first grade.

Tuscarawas Valley Comprehensive Mental Health Center, Dover, Ohio, will receive $69,682 to provide consultation and training to teachers and parents, and direct diagnosis and treatment to children in remote schools through use of an ambulatory "mini mental health clinic."

Children's Mental Health Center, Columbus, Ohio, will receive $408,433 to develop a network of preventive services for children and youth from high-risk populations in cooperation with the Children's Hospital and the public schools.

Children's Psychiatric Center of the Jewish Hospital, Cincinnati, Ohio, will receive $125,093 for preventive services to preschool children and their families through providing outreach consultation and education services to all preschool centers in the catchment area.

Tulsa Community Mental Health Center, Tulsa, Oklahoma, will receive $60,081 for extending outpatient and consultation services by means of a mobile van, for children ages 4–6 in outlying areas.

Homestead Hospital Community Mental Health/Mental Retardation Center, Homestead, Pennsylvania, will receive $80,118 for expansion of consultation and education services to schools, and establishment of a crisis intervention service in the community.

West Philadelphia Community Mental Health Consortium—Philadelphia Child Guidance Clinic, Philadelphia, Pennsylvania, will receive $102,691 for coordination and development of services for high-risk preschoolers and their families, with emphasis on involvement with the community.

Helen Ross McNabb Center, Knoxville, Tennessee, will receive $202,033 to establish satellite resources and expand consultation and education in schools, day care, and high-risk settings.

Mental Health/Mental Retardation Center for Greater West Texas, San Angelo, Texas, will receive $41,818 for services to elementary school-age children through use of

school counselors as liaison persons between schools and the mental health center.

Rio Grande Area III Community Mental Health Center, Austin, Texas, will receive $116,839 for a program focused on health needs and adjustment of high-risk preschool children and their families, with special emphasis on preventive outreach and outpatient services and on cooperation with other agencies.

Weber Mental Health Center, Ogden, Utah, will receive $26,355 to expand consultation to schools and initiate a preventive preschool program for Chicano children, with a strong parent-education component.

Southwest Region Mental Health Center, Rutland, Vermont, will receive $147,140 for a program of case-finding, consultation to schools and agencies, diagnostic and treatment services, and a child advocacy program focusing on preschool and school-age children.

Seattle School District #1, Seattle, Washington, will receive $344,178 to provide direct services and to develop primary prevention programs for children, kindergarten through second grade, focusing on specific high-risk minority and poverty groups.

Appalachian Community Mental Health Center, Elkins, West Virginia, will receive $161,460 for provision of locally available preventive and early intervention treatment services to preschool and kindergarten-age children in rural counties.

Community Mental Health Center, Region II, Huntington, West Virginia, will receive $106,797 to expand preventive consultation and education services to child-serving facilities, including Head Start programs, schools, juvenile court, mental retardation facilities, and others.

Northern Wyoming Mental Health Center, Sheridan, Wyoming, will receive $59,207 to expand outreach services to schools, homes, social organizations, courts, churches, and day-care centers to change attitudes and develop new skills in handling children, with focus on high-risk children from disturbed families.

The following agencies will receive staffing grants for children's services not affiliated with a Community Mental Health Center:

Mental health teams serving school children, families, and teachers, Shreveport, Louisiana, will receive $99,331 for a therapeutic education facility for school-age children who need assistance but not institutionalization, including consultation and training teams to work with families, children, school personnel, and others.

Irish Channel Crisis Center for Children, New Orleans, Louisiana, will receive $125,128 to provide diagnostic and evaluative services for children from high-risk, socially deprived areas, featuring a crisis school for children who are out of school or facing suspension.

Washburn Child Guidance Center, Minneapolis, Minnesota, will receive $29,268 for a preschool program for high-risk children, including parent involvement and home consultation and observation.

New Children's Services for Rural Clinics in Nevada, Reno, Nevada, will receive $131,472 for a program to introduce preventive approaches to child mental health care and provide lacking services to isolated communities through a combination of "circuit riding" and "in place" staff.

Children's Psychiatric Center, Eatontown, New Jersey, will receive $354,906 for expansion of services to high-risk and hard-to-reach populations, with emphasis on crisis intervention at the community level.

Bethany Guidance Center, Bethany, Oklahoma, will receive $49,958 for a program utilizing outreach interdisciplinary teams for multiphasic screening of children entering first grade, with emphasis on teaching parents and teachers about children's adjustment difficulties in the transition from home to school.

Region II Guidance Center, Muskogee, Oklahoma, will receive $127,785 to bring services to Indian communities in remote outlying areas including therapeutic camps for children.

Fayette County Mental Health/Mental Retardation Clinic, Uniontown, Pennsylvania, will receive $114,295 to provide extended outreach services to children and their families through establishing neighborhood centers staffed by paraprofessionals.

Mental Health Field Program, Mexican-American Unity Council, San Antonio, Texas, will receive $211,922 to provide a broad range of services (dietary, pediatric, cultural, as well as mental health) to the Mexican-American population, utilizing nonprofessional outreach workers and emphasizing strong community involvement.